

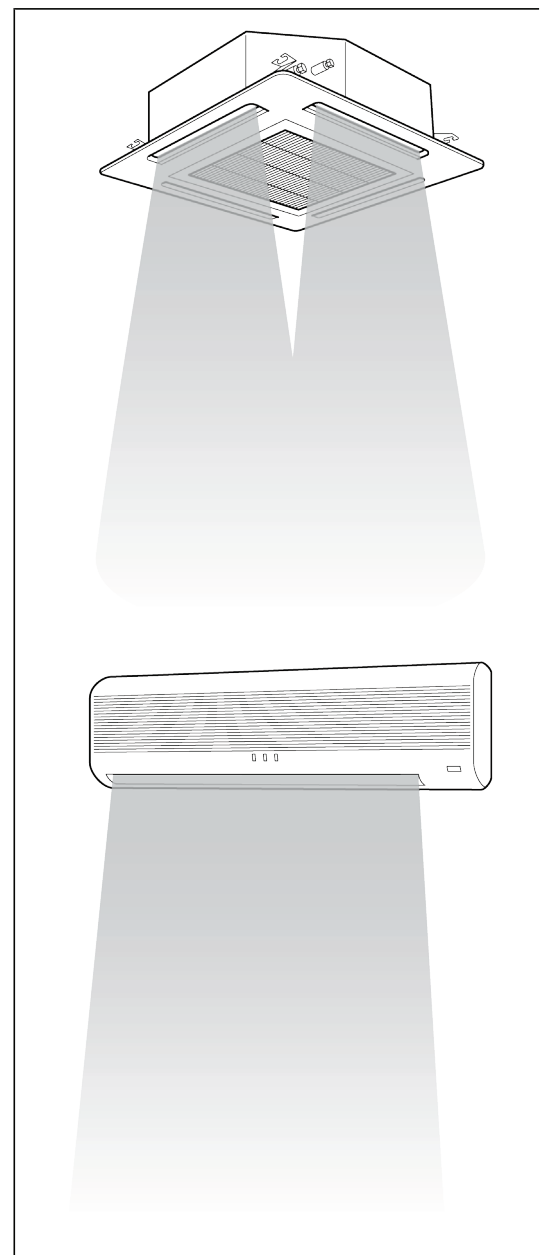


HITACHI
Inspire the Next

INDOOR UNITS SYSTEM FREE
& Complementary Systems
FSN(2/3/4)(M)(E)(i)

Technical Catalogue

RCI
RCIM
RCD
RPC
RPI
RPIM
RPK
RPF
RPFI
KPI
DX-Interface



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1. General information

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1.1 General information

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No type of modification must be made to the equipment without prior, written authorization from the manufacturer.

1.1.1 Introduction

HITACHI offers the SYSTEM FREE range of indoor units, the main advantage of which is that they can be combined with UTOPIA and SET-FREE series outdoor units.

This eliminates the need to duplicate models of indoor units and reduces stock.

Outdoor units	Subseries	SYSTEM FREE Indoor units	Complementary systems
UTOPIA series (*)	IVX Premium / Standard	RCI RCIM RCD RPC RPI RPIM RPK RPF RPMI	KPI DX-Interface
	IVX		
	(2/2.5)HP series		
	ES		
	RASC		
SET-FREE series	FS(V)N(Y)2E		
	FSN2		
	FXN		
	FSN(1)		
	FSNM(E)		
	FSXN		



NOTE

These indoor unit and outdoor unit series are the last updated at time of the issuing; other previous models and coming developments could be available for combination.

For RCI-FSN3 with motion sensor is recommended to connect with IVX Premium and IVX Standard series in order to obtain the maximum performance.

1.1.2 Environment-friendly units

The new range of HITACHI indoor units uses environmentally-friendly R410A gas refrigerant, and the RoHS and Green Dot regulations are applied throughout the manufacturing and installation process to reflect HITACHI's awareness of environmental respect and commitment.



1.2 Applied symbols

During normal air conditioning system design work or unit installation, greater attention must be paid in certain situations requiring particular care in order to avoid damage to the unit, the installation or the building or property.

Situations that jeopardise the safety of those in the surrounding area or that put the unit itself at risk will be clearly indicated in this manual.

To indicate these situations, a series of special symbols will be used to clearly identify these situations.

Pay close attention to these symbols and to the messages following them, as your safety and that of others depends on it.



DANGER

- *The text following this symbol contains information and instructions relating directly to your safety and physical wellbeing.*
- *Not taking these instructions into account could lead to serious, very serious or even fatal injuries to you and others in the proximities of the unit.*

In the texts following the danger symbol you can also find information on safe procedures during unit installation.



CAUTION

- *The text following this symbol contains information and instructions relating directly to your safety and physical wellbeing.*
- *Not taking these instructions into account could lead to minor injuries to you and others in the proximities of the unit.*
- *Not taking these instructions into account could lead to unit damage.*

In the texts following the caution symbol you can also find information on safe procedures during unit installation.



NOTE

- *The text following this symbol contains information or instructions that may be of use or that require a more thorough explanation.*
- *Instructions regarding inspections to be made on unit parts or systems may also be included.*

1.3 Product guide

1.3.1 Classification of indoor unit models

Unit type (indoor unit): RCI, RCIM, RCD, RPC, RPI, RPIM, RPK, RPF, RPI

Position-separating hyphen (fixed)										
Capacity (HP): 0.8, 1.0, 1.5, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.0										
FS = SYSTEM FREE										
N = R410A refrigerant										
H = Hotel (RPK-(0.8/1.5) only)										
2/3/4 = series										
E = Made in Europe										
M = Made in Malaysia										
- = Made in Japan										
i = Version up (RCI only)										
DU = Drain Up (RPIM only)										
XXX	-	X.X	FS	N	(H)	X	(X)	(i)	(-DU)	

1.3.2 Classification of KPI models

KPI energy / heat recovery unit

Position-separating hyphen (fixed)						
Capacity (m ³ /h): 250, 500, 800, 1000, 1500, 2000, 3000						
2 = 1 ~ 230V 50Hz						
E = Energy recovery						
H = Heat recovery						
X = Active (Energy recovery + DX section)						
3 = series						
E = Made in Europe						
KPI	-	(Y)YY	2	Y	3	E







1.3.3 Classification of DX-Interface models

DX-Interface type

Position-separating hyphen (fixed)				
Capacity (HP): 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.0				
E = Made in Europe				
1 = series				
EXV	-	X.X	E	1

1.3.4 Product guide: indoor units

◆ RCI and RCIM indoor units

FSN(2/3)(E)(i) indoor units					
RCI			RCIM		
					
4-way cassette			4-way cassette (compact)		
Unit	Code	Unit	Code	Unit	Code
				RCIM-0.8FSN2	60278010
RCI-1.0FSN3Ei	7E403014	RCI-1.0FSN3	60278119	RCIM-1.0FSN2	60278011
RCI-1.5FSN3Ei	7E403015	RCI-1.5FSN3	60278120	RCIM-1.5FSN2 (*)	60278013
RCI-2.0FSN3Ei	7E403016	RCI-2.0FSN3	60278121	RCIM-2.0FSN2 (*)	60278014
RCI-2.5FSN3Ei	7E403017	RCI-2.5FSN3	60278122		
RCI-3.0FSN3Ei	7E403018	RCI-3.0FSN3	60278123		
RCI-4.0FSN3Ei	7E403020	RCI-4.0FSN3	60278124		
RCI-5.0FSN3Ei	7E403021	RCI-5.0FSN3	60278125		
RCI-6.0FSN3Ei	7E403022	RCI-6.0FSN3	60278126		
Panels (Optional)					
					
P-N23NA	70531000	P-AP160NA1	60297215	P-N23WAM	60197160
		P-AP160NAE (With motion sensor)	60297217		

i NOTE

- The RCI and RCIM models must be used in combination with the panels indicated above.
- (*): Single combinations with IVX Premium / Standard series not allowed.



RCD and RPC indoor units

FSN2(E) indoor units					
RCD			RPC		
2-way cassette			Ceiling type		
Unit	Code			Unit	Code
RCD-1.0FSN2	60278029				
RCD-1.5FSN2	60278030				
RCD-2.0FSN2	60278031			RPC-2.0FSN2E	7E440003
RCD-2.5FSN2	60278032			RPC-2.5FSN2E	7E440004
RCD-3.0FSN2	60278033			RPC-3.0FSN2E	7E440005
		RCD-4.0FSN2	60278034	RPC-4.0FSN2E	7E440007
		RCD-5.0FSN2	60278035	RPC-5.0FSN2E	7E440008
				RPC-6.0FSN2E	7E440009

Panels (Optional)			
P-N23DNA	60297211	P-N46DNA	60297212



NOTE





- The RCD models must be used in combination with the panels indicated above.

◆ RPI and RPIM indoor units

FSN(3/4)E indoor units					
RPI			RPIM		
					
Indoor ducted unit					
Unit	Code	Unit	Code	Unit	Code
RPI-0.8FSN4E	7E424013			RPIM-0.8FSN4E	7E430013
				RPIM-0.8FSN4E -DU	7E431013
RPI-1.0FSN4E	7E424014			RPIM-1.0FSN4E	7E430014
				RPIM-1.0FSN4E -DU	7E431014
RPI-1.5FSN4E	7E424015			RPIM-1.5FSN4E	7E430015
				RPIM-1.5FSN4E -DU	7E431015
RPI-2.0FSN4E	7E424016				
RPI-2.5FSN4E	7E424017				
RPI-3.0FSN4E	7E424018				
RPI-4.0FSN4E	7E424020				
RPI-5.0FSN4E	7E424021				
RPI-6.0FSN4E	7E424022				
		RPI-8.0FSN3E	7E424010		
		RPI-10.0FSN3E	7E424011		



◆ RPK, RPF and RPFI indoor units

FSN(H)(2/3)(E/M) indoor units					
		 			
RPK		RPF		RPFI	
					
Wall type		Floor type		Floor concealed type	
Unit	Code	Unit	Code	Unit	Code
RPK-0.8FSN3M	60278146				
RPK-0.8FSNH3M	60278154	RPF-1.0FSN2E	7E450001	RPFI-1.0FSN2E	7E460001
RPK-1.0FSN3M	60278147				
RPK-1.0FSNH3M	60278155	RPF-1.5FSN2E	7E450002	RPFI-1.5FSN2E	7E460002
RPK-1.5FSN3M	60278148				
RPK-1.5FSNH3M	60278156	RPF-2.0FSN2E (*)	7E450003	RPFI-2.0FSN2E (*)	7E460003
RPK-2.0FSN3M	60278149	RPF-2.5FSN2E (*)	7E450004	RPFI-2.5FSN2E (*)	7E460004
RPK-2.5FSN3M	60278150				
RPK-3.0FSN3M	60278151				
RPK-4.0FSN3M	60278152				
EV-1.5N1 ⁽¹⁾	60921791				


NOTE

- ⁽¹⁾ For RPK-(0.8-1.5)FSNH3M models only.
- (*): Single combinations with IVX Premium / Standard series not allowed.



1.3.5 Product guide: complementary systems

◆ KPI energy / heat recovery unit

Complementary systems					
KPI					
					
Energy recovery		Heat recovery		Active (Energy Recovery+DX section)	
Unit	Code	Unit	Code	Unit	Code
KPI-252E3E	70602000				
KPI-502E3E	70602001	KPI-502H3E	70602101	KPI-502X3E	70602201
KPI-802E3E	70602002	KPI-802H3E	70602102	KPI-802X3E	70602202
KPI-1002E3E	70602003	KPI-1002H3E	70602103	KPI-1002X3E	70602203
KPI-1502E3E	70602004	KPI-1502H3E	70602104		
KPI-2002E3E	70602005	KPI-2002H3E	70602105		

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◆ DX-Interface

Complementary systems	
Control box	Expansion valve box
	

DX-Interface	
Unit	Code
EXV-2.0E1	7E610900
EXV-2.5E1	7E610901
EXV-3.0E1	7E610902
EXV-4.0E1	7E610903
EXV-5.0E1	7E610904
EXV-6.0E1	7E610905
EXV-8.0E1	7E610906
EXV-10.0E1	7E610907

1.3.6 Accessory code list

HITACHI has a wide range of accessories and remote control systems that can be used with the SET FREE and UTOPIA outdoor units. Consult the Technical Catalogue for controls and for the corresponding outdoor units.

Name	Description	Code	Figure
B-23H4	Adapter for deodorising filter	60199790	
B-160H2		60291759	
F-23L4-K	Anti-bacteria filter	60199791	
F-23L4-D	Deodorising filter	60199793	
F-46L4-D		60199794	
F-71L-D1		60291757	
F-160L-D1		60291758	
F-160L-K	Long life filter	60291760	
PDF-23C3	Duct connecting flange	60199795	
PDF-46C3		60199796	
OACI-232	Outdoor air inlet kit	60199797	
OACI-160K2		60291761	
PD-75	Outdoor air inlet kit	60199798	
PD-75A		60291763	
PI-23LS5	3-way outlet parts	60199799	
PI-160LS1		60291756	
TKCI-232	T-shaped duct connection kit	60199801	
TKCI-160K		60291762	
TE-03N(1)	Branch pipe UTOPIA (pipe kit)	70800007 (70527012)	
TE-04N(1)		70800008 (70527013)	
TE-56N(1)		70800009 (70527014)	
TE-08N		70800003	
TE-10N		70800004	
TW-22AN		60291815	
TW-52AN		60291816	
TW-102AN		60291817	
TG-53AN		60291818	
TG-103AN		60291819	
MW-102AN		70522001	
MW-162AN		70522002	

Name	Description	Code	Figure
TRE-06N(1)	Distributor UTOPIA	70800005 (70527015)	
TRE-810N(1)		70800010 (70527016)	
QE-810N(1)	Distributor UTOPIA	70800006 (70527017)	
E-102SN2	Branch pipe (multikit)	70524001	
E-162SN2		70524002	
E-242SN2		70524004	
E-302SN2		70524005	
E-52XN2		70525000	
E-102XN2		70525001	
E-162XN2		70525002	
E-202XN2		70525003	
E-242XN2		70525004	
E-322XN2		70525005	
MH-84AN	Distributor SET FREE	70522007	
MH-108AN		70522008	
MH-108XN		70523108	
ER-500	Energy exchanger for KPI	70550001	
ER-800		70550002	
ER-1000		70550003	
ER-1500		70550004	
ER-2000		70550005	
SLT-30-200-L600	Noise damper	70550200	
SLT-30-250-L600		70550201	
SLT-30-300-L600		70550202	
SLT-30-355-L600		70550203	
HEF-252	High efficiency filter	70552201	
HEF-502		70552202	
HEF-802		70552203	
HEF-1002		70552204	
HEF-1502		70552205	
HEF-2002		70552206	

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2. Features and benefits

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2





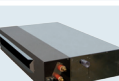






2.1 Benefits of the choice

2.1.1 Choice range

◆ Wide range of indoor units

The HITACHI indoor units have a wide range of capacities from 0.6 to 10.0 HP.

The capacity of each indoor unit is flexible, they are supplied set to the maximum capacity possible and can be easily adjusted to precise lower values in line with installation requirements (depending on the model).

System Free		Capacity (HP)														
Model		0.6	0.8	1.0	1.3	1.5	1.8	2.0	2.3	2.5	3.0	4.0	5.0	6.0	8.0	10.0
RCI 4-way cassette				●	●	●	●	●	●	●	●	●	●	●		
RCIM 4-way cassette (compact)		●	●	●	●	●	●	●								
RCD 2-way cassette				●	●	●	●	●	●	●	●	●	●			
RPC ceiling type							●	●	●	●	●	●	●	●		
RPI Indoor ducted unit (low profile)		●	●	●	●	●										
RPI Indoor ducted unit							●	●	●	●	●	●	●	●		
RPI Indoor ducted unit															●	●
RPIM Indoor ducted unit		●	●	●	●	●										
RPK wall type		●	●	●	●	●	●	●		●	●	●				
RPF floor type				●	●	●	●	●	●	●						
RPFI floor concealed type				●	●	●	●	●	●	●						



Constant capacity unit.



Unit with a capacity that can be set to a lower margin using the DIP switch.



Capacity available with the DIP switch configuration.



NOTE

Set to capacity 0.6 HP only for combination with Set Free mini series 2 (RAS-(4-6)FS(V)N(Y)2E)

◆ Combinability with the wide range of complementary systems

The parts forming the range of complementary systems are designed to be added to the installation and improve the performance of aspects such as the power consumption, efficiency and quality of the air conditioning.

KPI and KPI Active - Ventilation systems series 3E

A KPI is a ventilation unit designed to renew the air from a room or area taking out the exhaust air and supplying fresh outdoor air, increasing then the indoor air quality. To reduce the effect of supplying outdoor air in a conditioned room where a big temperature gap exists between indoors and outdoors, the KPI exchanges sensible heat and latent heat (latent heat only for KPI energy and KPI active) between inlet and outlet air streams, approaching supply air conditions to indoor conditions. The result is an indoor air renovation with a significant reduction of the refrigeration load that would be necessary to compensate the outdoor air supply.



2



NOTE

- The sensible heat exchange effect is that the hottest air stream temperature is reduced, while the coldest one is increased.
- The latent heat exchange effect is the transmission of vapor (humidity) from the wettest air stream to the other.

The main benefit of a KPI unit versus other ventilation systems is the free conditioning of fresh air, reducing the air conditioning system demand.

Moreover, the Active KPI, based in a KPI structure, includes an additional air treatment stage before SA section. This section includes a direct expansion valve coil, what makes possible the adaptation of the supply air to indoor air conditions, avoiding the inconvenient effect of air supply at a different temperature. Active KPI units have been prepared for the combination with both Utopia and Set Free systems.

New 3E Energy Recovery, Heat Recovery and Active KPI will be fully compatible with CSNET WEB 3.2 version. The installation is also possible with previous versions, but with some functional limitations.

DX-Interface series 1

The DX-Interface Kit is used to allow the connection of third-part manufacturer units to Hitachi outdoor units, what makes possible the control of their direct expansion coil (for R410a) following Hitachi control logic. Typical applications are air handling units (AHU), air curtains and units similar to standard indoor units (standard indoor units understood as cooling/heating indoor air treatment units for room conditioning).

Thermistors are supplied into the Dx-Kit to be installed into the unit to be controlled (two thermistors for air –inlet and outlet of the dx-coil- and two for piping – liquid pipe and gas pipe-). The connections of the thermistors must be done in the field.

Easy setting by 7-segments display

Most of the settings and optional functions are configurable through the control box PCB. New control box is equipped with a newly developed PCB, which includes four 7-segments display and three push buttons, making easier the setting during the installation.

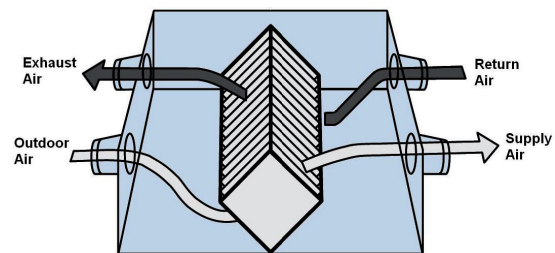
◆ Range of accessories

All indoor units have a range of accessories for easier installation, operating and maintenance.

These accessories are designed to adapt the unit to the type of installation that the air conditioning system needs and to improve its performance, considering the quality parameters required.

The range of accessories includes:

- Remote controls for the handling and management of the installation's operation.
- Panels to provide cassette-type indoor units with air outlet and distribution mechanisms.
- Filters to absorb dust and odours.
- Branch pipes (pipe kit and multikits), distributors and manifolds to effectively complete the installation.



2.1.2 Remote control range

HITACHI has a range of remote control systems classified according to the type of management and the number of units being managed:

- Individual remote control systems.
- Centralised remote control systems.
- Building air conditioning systems (CS-NET WEB).
- Building management systems BMS (Building Management System).

◆ Individual remote control systems

The individual remote control systems, whether they are wireless or connected directly by cable, have a wide range of functions for easier unit management, the programming of specific settings or the identification of incidents. Recommended for managing a small number of units.



◆ Centralised remote control systems

The centralised remote control systems combine the functions of the remote controls and extend the management and setting possibilities for several air conditioning systems distributed around the entire floor of a building.



◆ Computerised remote control systems

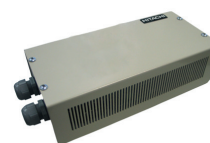
Computerised remote control systems multiply management and setting possibilities, allowing these to be carried out from any point of the local communications network via a two-core, non-polarity cable or even over the internet.

Recommended for managing more than two floors of a building independently.



◆ Building Management System (BMS)

Integration into installations with intelligent management. Gateway interface with Lonworks BMS, KNX, MODBUS BMS and BACnet BMS systems.

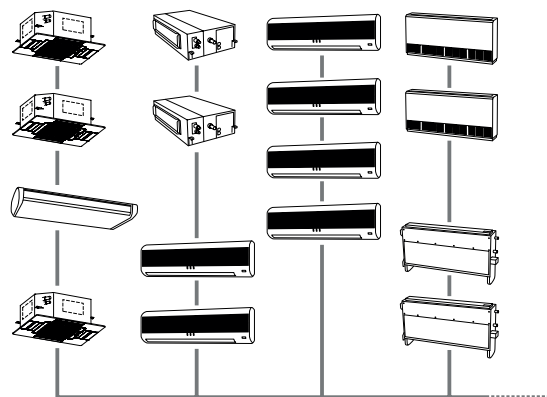


2.1.3 Flexible system

◆ Combination of different units

The indoor units of the SYSTEM FREE series can be combined as appropriate in both UTOPIA and SET-FREE systems to create the most appropriate air conditioning system for each room.

The variety of capacities and mounting accessories largely facilitate installation design. Furthermore, unit management through any of the remote control systems available means that the total performance of the system is optimised.



2

◆ Adapting the capacity of each unit using the DIP switches

In some situations, it is handy to be able to adjust the capacity of the indoor units to adapt them to actual installation requirements (as show the table in section: *Wide range of indoor units*, see on page 14).

The power of each indoor unit in the SYSTEM FREE range can be set precisely using a DIP switch located on the circuit board.

The DIP switch allows for more precise on-site adjustments to be made to the installation after mounting is complete, during start-up or at any time, optimising the total performance of the system.

◆ Unit management through the range of remote controls

As well as the normal functions available on remote controls, the HITACHI range of SYSTEM FREE indoor units includes simultaneous management functions for groups of units.

- It is possible to use two remote controls for two indoor units or just one remote control, arranging the indoor units in control groups (e.g. from 1 to 16 units in each group).
- The built-in safety functions keep the timer running in the event of problems with the power supply (including power cuts lasting several weeks).

The management functions also include the solving of any incident that may arise.

- Automatic check for incident solving that provides real-time information through an alarm code.
- Incident codes displayed on the remote control screen where an operating anomaly arises. Detailed information is also displayed on these codes.

2.1.4 Availability of the Hi-Tool Kit selection software

◆ Assisted air conditioning installation design

The Hi-Tool Kit selection software is a tool for designing air conditioning installations and automatically generating all necessary related information to complete the planned installation.

The necessary related information includes:

- Product selection table.
- Cooling and wiring diagram according to the installation design.
- Full list of necessary products to complete the installation.
- Installation start-up management.



2.2 Installation advantages

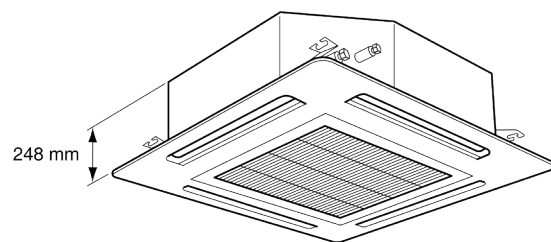
2.2.1 Indoor units

◆ Main features of the installation

RCI - 4-way cassette



- Compact and low in height, they can be installed in restricted spaces inside false ceilings: the units are only 248 mm (1.0-2.5 HP) and 298 mm (3.0-6.0 HP) in height, making them some of the smallest in the market.
- Adaptable to high ceilings: this model has been adapted for installations in high ceilings of up to 4.2 m thanks to the incorporation of high-speed ventilation. This function means that the environment in exhibition rooms, shops or department stores, for example, can be optimally air conditioned.



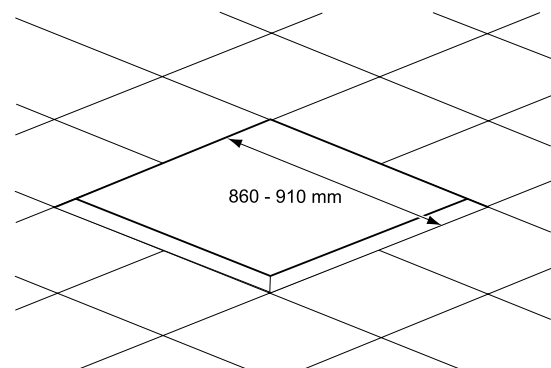
Remote control setting (optional functions C5)	Ceiling height (m)	
	(1.0-2.5) HP	(3.0-6.0) HP
Standard (00)	Below 2.7	Below 3.2
Speed increase 1 (01)	2.7 to 3.0	3.2 to 3.6
Speed increase 2 (02)	3.0 to 3.5	3.6 to 4.2

- Less need for housing space in ceilings for new installations and renewed units: the size of the opening required in the ceiling has been modified from the usual 910 mm to a range of between 860 and 910 mm, which means a smaller hole is required in the ceiling.

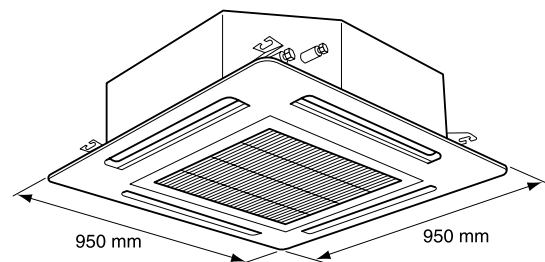
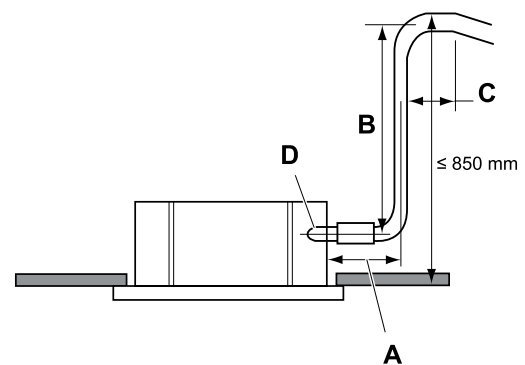
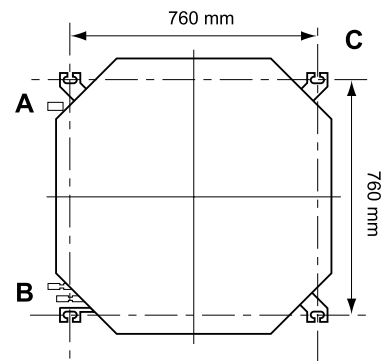


NOTE

The minimum installation space is 860 mm. A 910 mm hole should be made for easier installation.



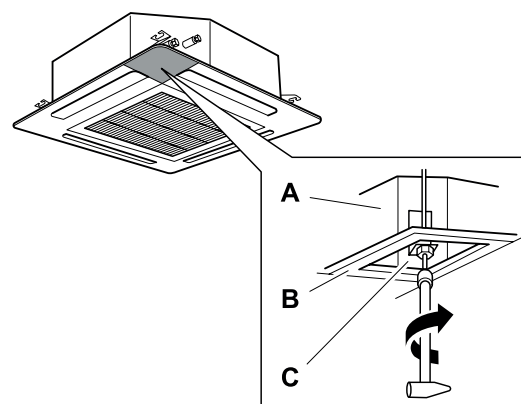
- Flexible unit installation: installation is notably easier thanks to the unit mounting system. The distance between its suspension points at each corner of the unit is 760 mm.
- The direction in which the unit is installed can be easily modified to adapt to the pipe run: the positions of the unit mooring points do not have to be modified.
- The simple design, even for continuous installations, means that refrigerating pipes and drain hoses can be run along different corners for easier distribution and improved installation efficiency.
- The space between the drain pipe connection and the refrigerant pipe connections improves access during installation work.
 A: drain pipe connection.
 B: refrigerant pipe connection.
- Equipped with a drain pump to force condensates up to 850 mm in height in relation to the unit. The pump is automatically enabled when the accumulated water level is too high.
 A: ≤ 300 mm ($A + B + C \leq 1100$ mm).
 D: transparent drain pipe. To view the circulation of condensates.
- Standard panel size: the size of the panels has been standardised to 950 mm in width to make them easy to swap with other, different capacity models.



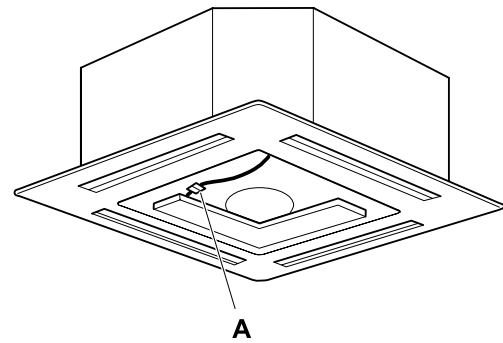
- Unit height easily adjustable from each corner: each of the four corners of the air panel includes access for easy adjustment of the height of the unit without having to remove the panel.
 A: unit cabinet.
 B: air panel.
 C: access for height adjustment.

i **NOTE**

The unit can be precisely lined up with the ceiling -arrow by moving the structure up or down using the set screws accessible on the four corners.



- The electrical connection for the air panel -A- is located inside the air inlet grille on the unit. The electrical box cover does not have to be opened to connect the panel.



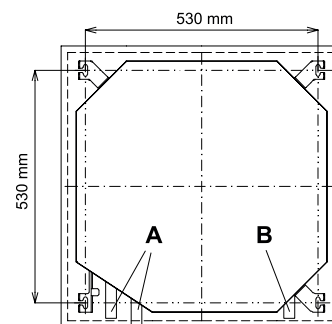
RCIM - 4-way cassette (compact)

- Compact and low in height, they can be installed in restricted spaces inside false ceilings: the units are just 295 mm in height, making them some of the smallest in the market.
- Adaptable to high ceilings: this model has been adapted for installations in high ceilings of up to 3.5 m.

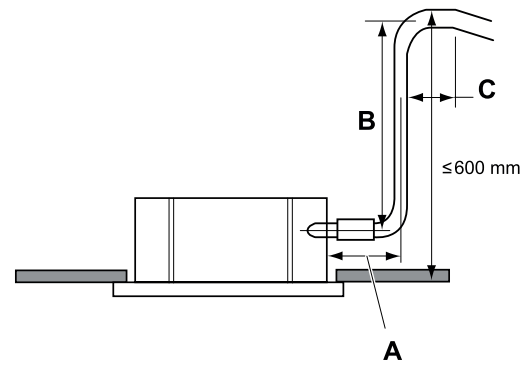


Remote control setting	Ceiling height (m)	
	(0.8-1.5) HP	2.0 HP
Standard	Below 2.5	Below 2.7
Speed increase 1	2.5 to 2.9	2.7 to 3.1
Speed increase 2	2.9 to 3.2	3.1 to 3.5

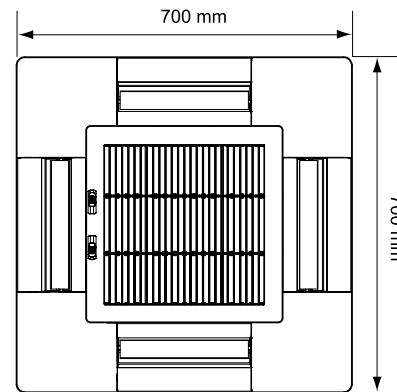
- Flexible unit installation: installation is notably easier thanks to the unit mounting system. The distance between its suspension points at each corner of the unit is 530 mm.
- The direction in which the unit is installed can be easily modified to adapt to the pipe run: the positions of the unit mooring points do not have to be modified.
- The simple design, even for continuous installations, means that refrigerating pipes and drain hoses can be run along different corners for easier distribution and improved installation efficiency.
- The space between the drain pipe connection and the refrigerant pipe connections improves access during installation work.
A: refrigerant pipe connection.
B: drain pipe connection.



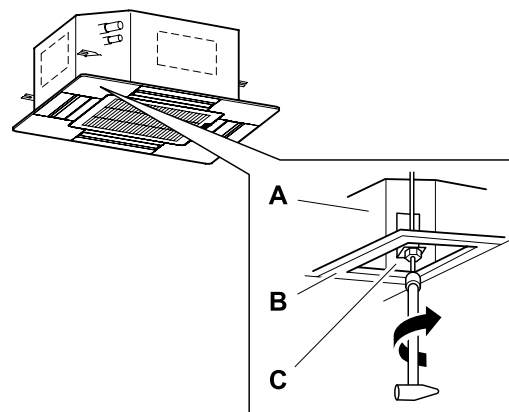
- Equipped with a drain pump to force condensates up to 600 mm in height in relation to the unit. The pump is automatically enabled when the accumulated water level is too high.
A: ≤ 300 mm (A + B + C ≤ 1100 mm).



- Standard panel size: the size of the panels has been standardised to 700 mm in width.
- The unit measurements (570 x 570 mm) mean that standard European panels measuring 600 x 600 mm can be used.



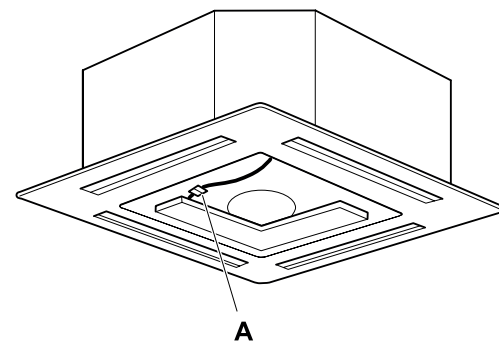
- Unit height easily adjustable from each corner: each of the four corners of the air panel includes access for easy adjustment of the height of the unit without having to remove the panel.
A: unit cabinet.
B: air panel.
C: access for height adjustment.



i NOTE

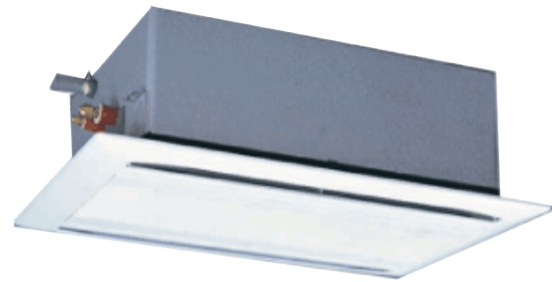
The unit can be precisely lined up with the ceiling -arrow- by moving the structure up or down using the set screws accessible on the four corners.

- The electrical connection -A- for the air panel is located inside the air inlet grille on the unit. The electrical box cover does not have to be opened to connect the panel.

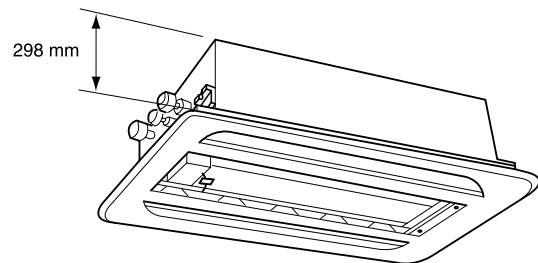


2

RCD - 2-way cassette

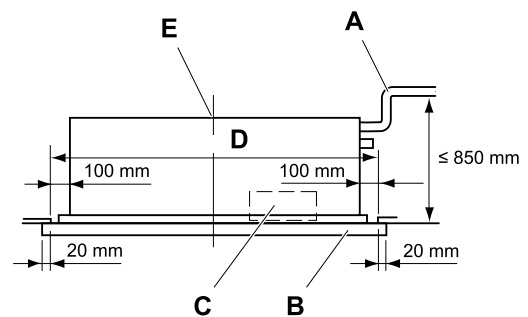


- Compact and low in height, they can be installed in restricted spaces inside false ceilings: the units are just 298 mm in height, making them some of the smallest in the market.
- Adaptable to high ceilings: this model has been adapted for installations in high ceilings of up to 3.1 m

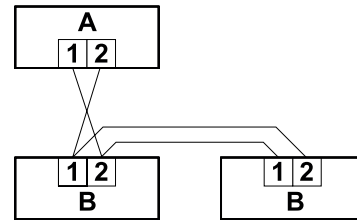


Remote control setting	Ceiling height (m)
Standard	Below 2.7
Speed increase 1	2.7 to 2.9
Speed increase 2	2.9 to 3.1

- Equipped with a drain pump to force condensates up to 850 mm in height. The pump is automatically enabled when the accumulated water level is too high.
A: drain pipe.
- Access to the electrical box to connect the unit and configure the circuit board is easy, removing the air panel.
C: electrical box.
- For easier unit positioning and installation, the air panel has a central line that coincides with the central line on the unit.
B: air inlet panel.
D: opening in false ceiling.
E: central line.



- Units communicate via a two-core, non-polarity communications cable: communication faults due to connection errors during installation are avoided and the communication terminals are much smaller.
A: outdoor unit.
B: indoor unit.



2

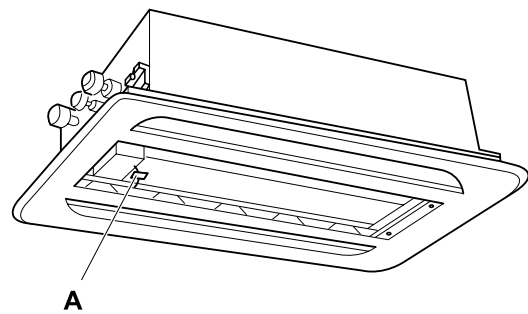
- The electrical connection -A- for the air panel is located inside the air inlet grille on the unit. The electrical box cover does not have to be opened to connect the panel.



NOTE

When the unit is equipped with air quality improvement filters, the electrical box must be opened and the drive motor cable length adjusted.

- Perfect adaptation of the new air panels in any ceiling. The panels protrude by just 30 mm to blend in perfectly with the ceiling. Furthermore, an additional space is provided to adapt to panel ceilings.

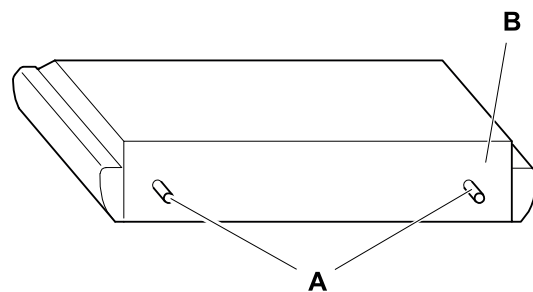


RPC - Ceiling type

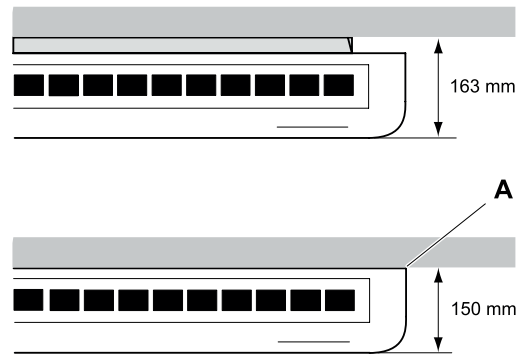


Versatile installation: to increase installation and positioning options, a second valve has been added for easier drain system installation.

- A: drains.
- B: rear.



Adjustable mounting brackets: the adjustable mounting brackets make unit height adjustment easier so that it sits flush to the ceiling -A-.



RPI - Indoor ducted unit

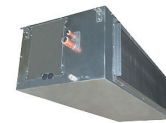
RPI (0.8-1.5) HP



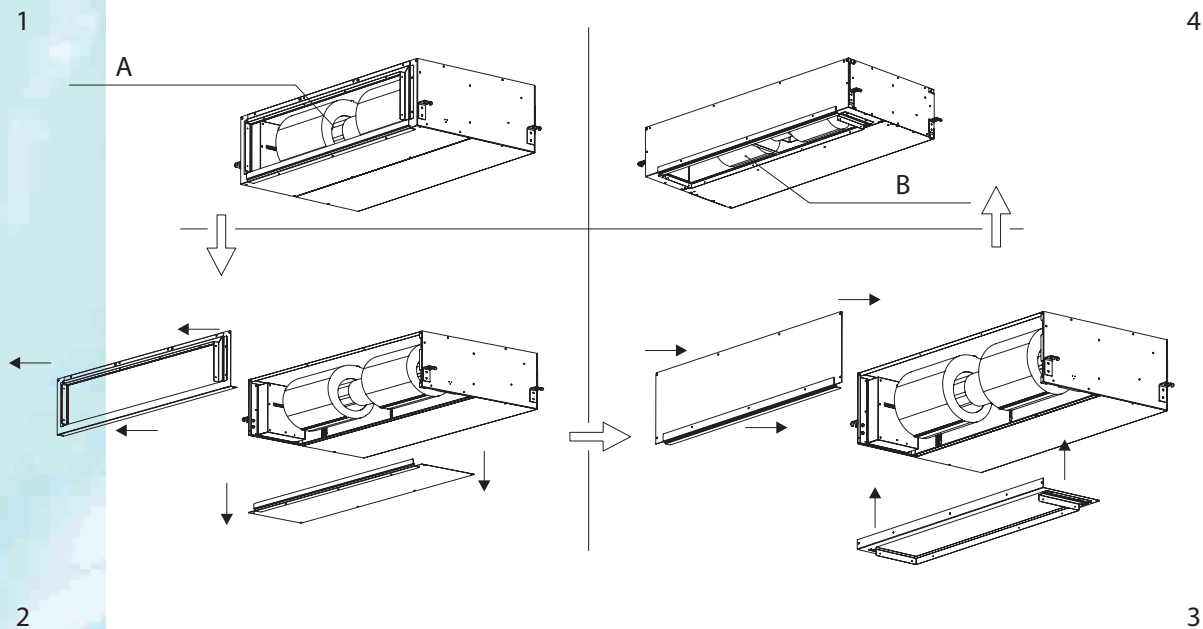
RPI (2.0-6.0) HP



RPI (8.0-10.0) HP



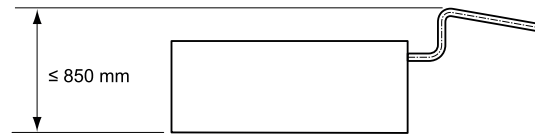
- RPI-(0.8-1.5)FSN4E
New RPI-(0.8-1.5)FSN4E series low profile and 198 mm height only.
- RPI-(2.0-6.0)FSN4E



Change in position of the air inlet on RPI-(2.0-6.0)FSN4E models: the position of the air inlet and, therefore, its direction can be modified by changing the position of the rear cover, as shown in the illustrations.

- 1 Initial position -A- of the air inlet (factory-supplied).
- 2 Air inlet and bottom cover away from the unit.
- 3 Interchange air inlet and cover position.
- 4 Final position -B- of the air inlet.

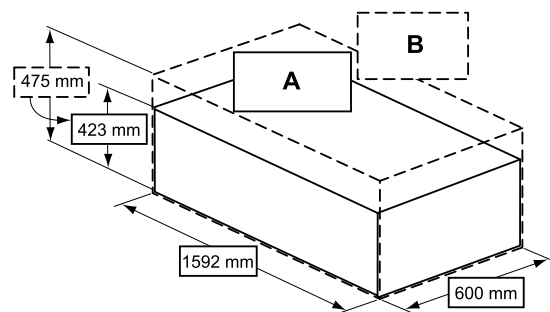
Equipped with a drain pump to force condensates up to 850 mm in height in relation to the unit. The pump is automatically enabled when the accumulated water level is too high.



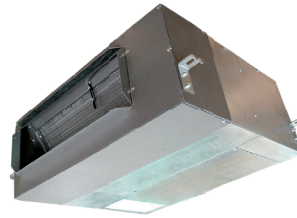
- RPI-(8.0/10.0)FSN3E

RPI-(8.0/10.0)FSN3E units have been designed to be as compact as possible to improve installation work.

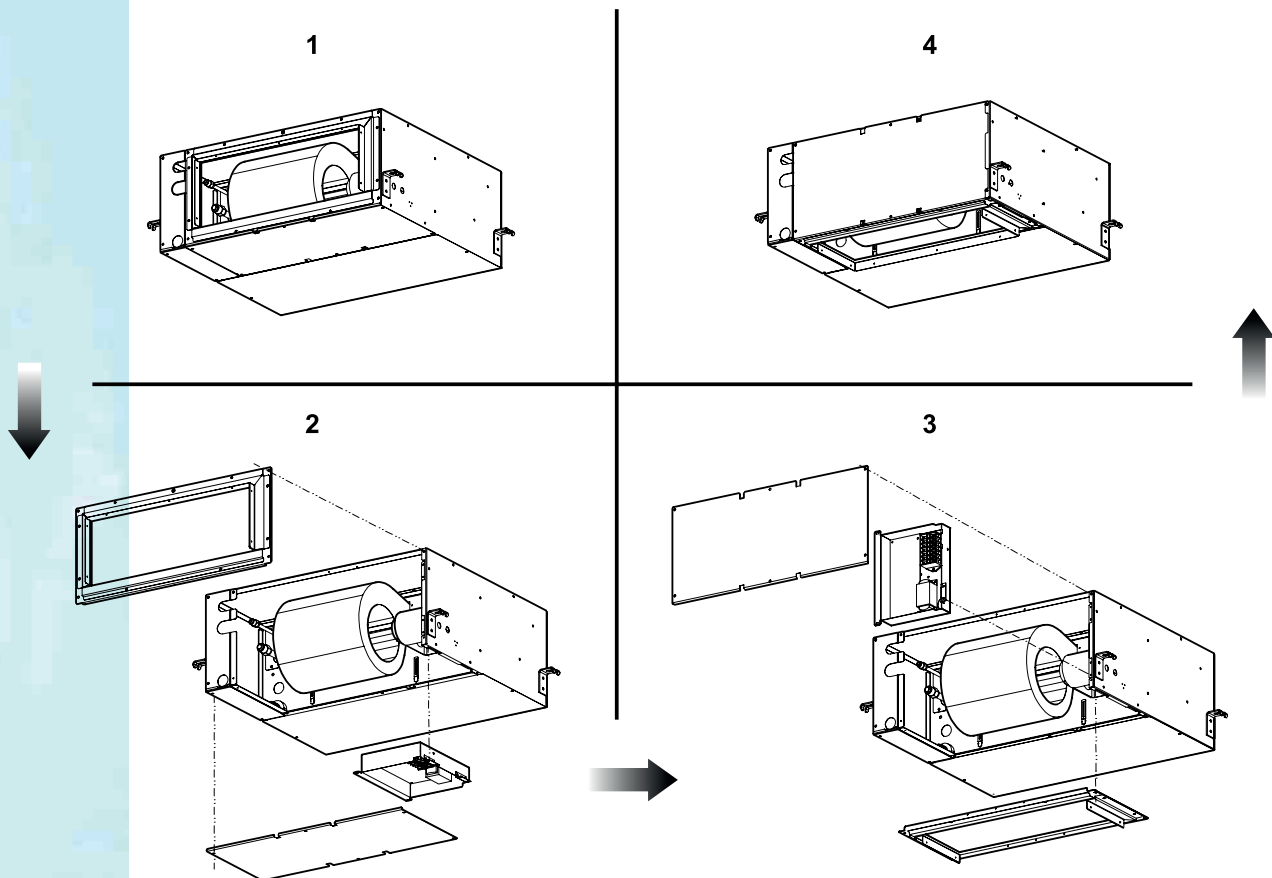
The result is units with a profile that is 52 mm less than the units of the previous model, maintaining the other measurements. As a result, they are easier to house and install in false ceilings (from 475 mm in height to 423 x 1592 x 600 mm).



2

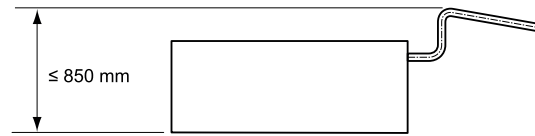
RPIM(-DU) - Indoor ducted unit - compact

RPIM-(0.8-1.5) FSN4E(-DU)

- Change in position of the air inlet on RPIM -(0.8-1.5) FSN4E(-DU) models: the position of the air inlet and, therefore, its direction can be modified by changing the position of the rear cover, as shown in the illustrations.



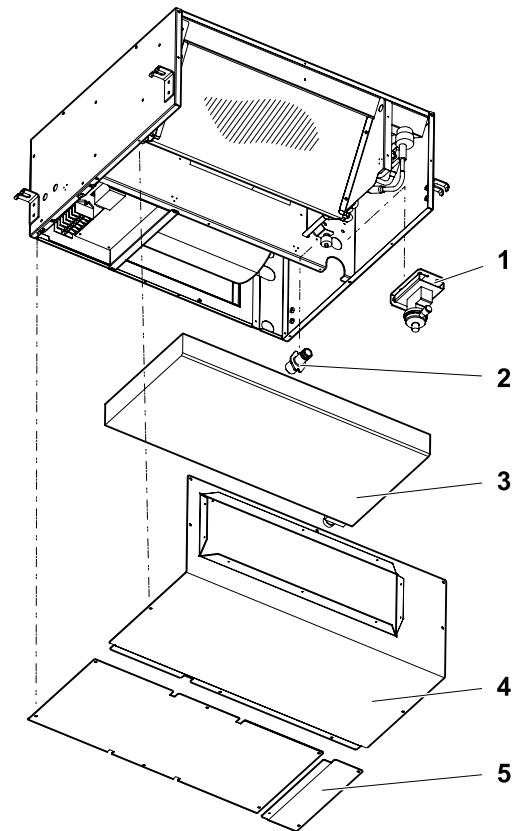
- 1 Initial position of the air inlet (factory-supplied).
- 2 Remove the front and rear covers and the electrical box from the unit.
- 3 Switch the position of the front and rear covers. Change the position of the electrical box on the unit as indicated in the illustration.
- 4 Final position of the air inlet.

- The RPIM-(0.8-1.5) FSN4E-DU units are equipped with a drain pump to force condensates up to 850 mm in height in relation to the unit. The pump is automatically enabled when the accumulated water level is too high.


NOTE

The drain pump kit (DU-M1E) is available for connections with the RPIM-(0.8-1.5)FSN4E units for installations where condensate evacuation conditions are unfavourable or for installations where it was not considered previously.

- 1 Drain pump.
- 2 Drain pipe.
- 3 Drain pan.
- 4 Rear cover.
- 5 Fan cover.



RPK - Wall type

New Design

New Design



RPK-(0.8/1.0)FSN(H)3M

RPK-1.5FSN(H)3M

RPK-(2.0/4.0)FSN3M

Compact design and reduced weight to allow easy installation.

Model	Weight (kg)	Sizes [mm] (HxWxD)
RPK-(0.8-1.0)FSN(H)3M	10	300x790x230
RPK-1.5FSN(H)3M	11	300x900x230
RPK-2.0FSN3M	17	333x1150x245
RPK-(2.5-4.0)FSN3M	18	333x1150x245

Series Composition

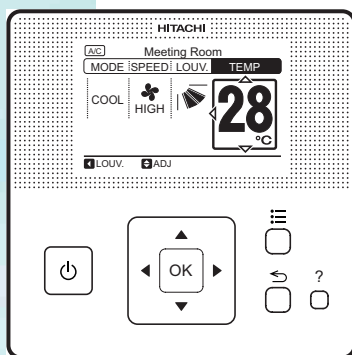
	Model (HP)						
	0.8	1.0	1.5	2.0	2.5	3.0	4.0
Wall type	○	○	○	○	○	○	○
Wall type (without Expansion Valve)	○	○	○	-	-	-	-

Expanded combinability

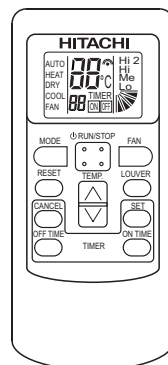
For the new RPK-0.8FSN3M is added DSW for special 0.6HP setting that can be used with Set Free Mini series 2. With this Dip switch setting (by switching DSW2-2# ON) the air flow of the unit is modified to be adjusted to 0.6 HP capacity.

New remote control switch: PC-ARF, PC-LH3B

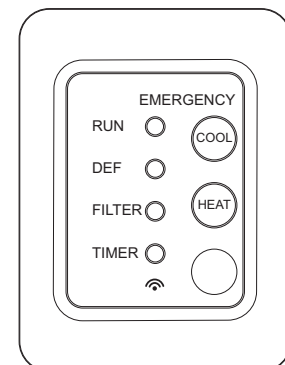
Wire remote control switch:
PC-ARF



Wireless remote control:
PC-LH3B



Wireless Receiver Kit:
PC-ALHZF



Low Noise Performance at Fan Speed "Low"

The operation sound is decreased at the fan speed "Low" by improving the fan system. Example of 1.0HP:

Current Model → **New Model**
34dB (at "LOW") → 30dB (at "LOW")

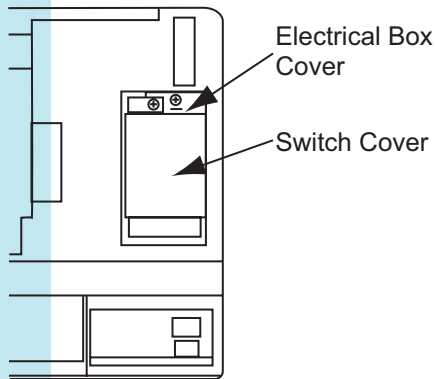
Improvement of Workability

The installation workability is improved. The wiring work and dip switch setting can be performed without removing the front panel.

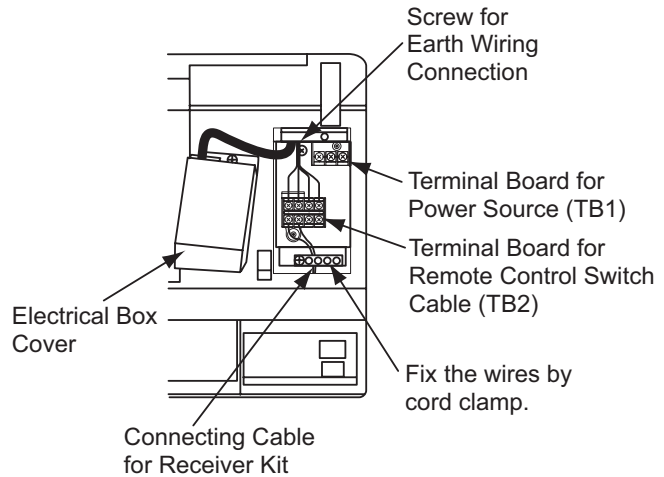
1 Access to Terminal Board

■ RPK-0.8 to 1.5

(a) Position of Electrical Box Cover The figure below shows that the front panel is removed. The electrical box cover can be opened without removing the front panel.

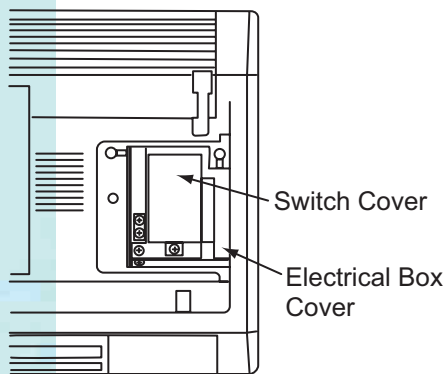


(b) Open the electrical box cover and perform the field electrical wiring work. Close the electrical box cover after the electrical wiring work is completed.

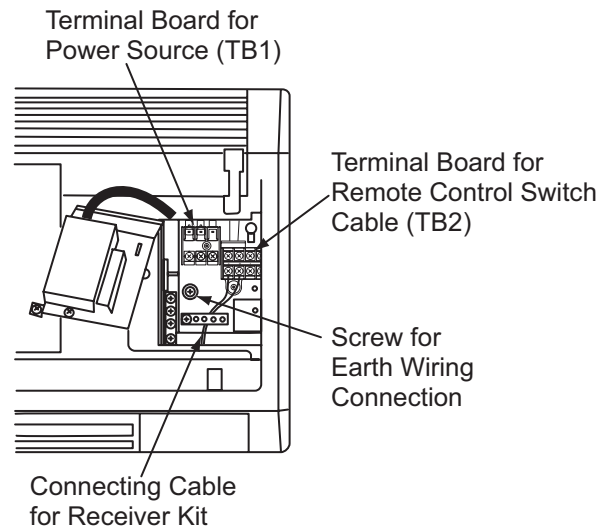


■ RPK-2.0 to 4.0

(a) Position of Electrical Box Cover The figure below shows that the front panel is removed. The electrical box cover can be opened without removing the front panel.



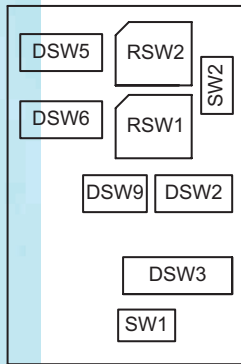
(b) Open the electrical box cover and perform the field electrical wiring work. Close the electrical box cover after the electrical wiring work is completed.



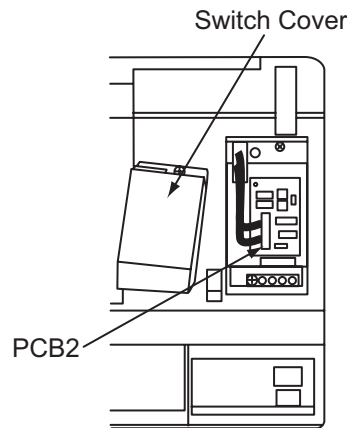
2 Access to Dip Switches

The positions of Dip Switches on PCB are shown in the figure below. Open the switch cover. After the Dip Switches are set, attach the switch cover again.

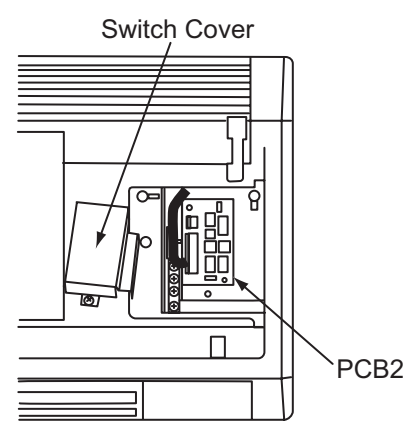
■ Dip Switch PCB (PCB2)



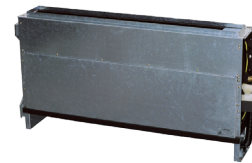
■ RPK-0.8 to 1.5



■ RPK-2.0 to 4.0



RPF - Floor type, RPF-I - Floor concealed type

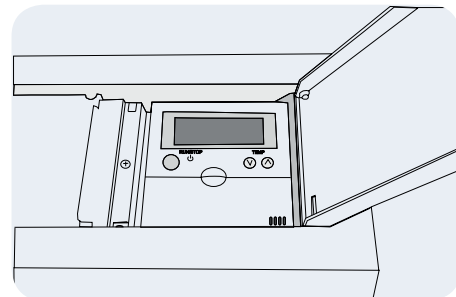


Thanks to its compact design with a depth of just 220 mm, the RPF(I) units can be installed along the wall to take up the least possible amount of floor space.

The unit measures just 630 mm in height, making it ideal for air conditioning the perimeter of the room.

- Remote control built into the unit (RPF)

The remote control can be installed below the plastic cover, as shown in the illustration.



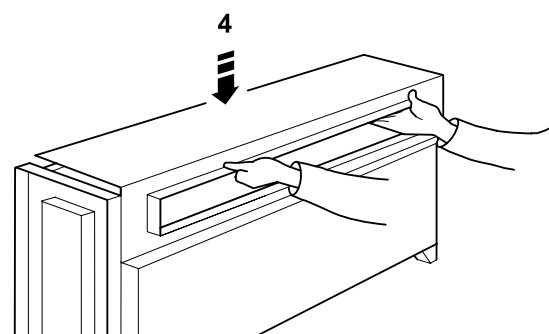
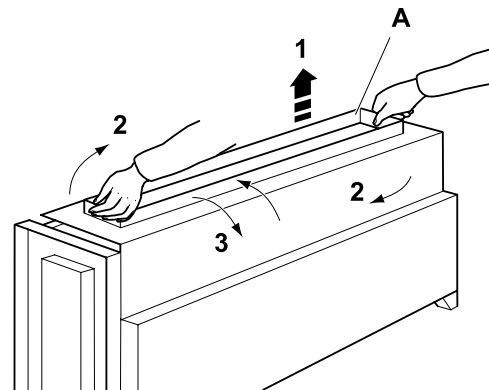
- Compact design

The RPF-I indoor units are normally installed underneath windows, without altering the inside of the room. Their compact design, measuring 620 mm in height and 220 mm in depth, means that they can be installed in limited spaces inside buildings.

- Change in the air outlet direction (RPF1)

The air outlet direction of the unit can be modified to adapt it to installation requirements, as shown in the illustration.

- 1 Lift air outlet -A-.
- 2 Turn the air outlet on itself until it is opposite its initial position.
- 3 Tilt the air outlet so that the nozzle is facing forwards.
- 4 Refit air outlet -A-.



2

◆ Easy and flexible pipe installation

Installation work optimisation

The HITACHI installation system is one of the most flexible and easy to install in the market, providing substantial savings in costs of installation, start up and throughout its working life, including maintenance work.

The different members of the SYSTEM FREE group of indoor units include commonly installed parts, thus making installation work simpler and requirements for material less.

Reduction and standardising of installation pipe diameters

During the design process of the SYSTEM FREE indoor units, the necessary connection pipe diameters have been standardised wherever possible. Therefore, most indoor units use connection pipes of similar diameters for the entire installation, thus making installation work easier.

Depending on system configuration and components used, it is possible to configure the entire installation of an air conditioning system using a maximum of two or three different pipe diameters.

Longer pipes between outdoor and indoor units

The distance between units is no longer a determining factor and has become a factor that favours freedom of design in air conditioning installations. The design of the outdoor units means that indoor units can be installed at a greater distance.

The possibility of installing indoor units further away offers greater decision-making autonomy and means that the most favourable location can be chosen. Depending on the model, the distance between both units may be up to 165 metres.

Nor is it necessary to install connection pipes between outdoor units of the same system, thus simplifying installation work.

2.2.2 Complementary systems

◆ KPI and KPI Active - Ventilation series 3E

Installation flexibility with cellulose and aluminium exchangers

In air conditioning installations where comfort and healthiness of the supplied air must be guaranteed, the transfer of latent heat (humidity) between it and the exhaust air must be avoided. The KPI units include two different exchanger concepts.

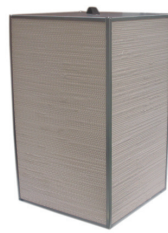
On one hand, the cellulose energy exchanger transfers sensible and latent heat between the supplied air and the exhaust air. On the other hand, the aluminium heat exchanger only exchanges sensible heat.

i **NOTE**

- *The sensible heat exchange effect is that the hottest air stream temperature is reduced, while the coldest one is increased.*
- *The latent heat exchange effect is the transmission of vapour (humidity) from the wettest air stream to the other.*

The KPI units, with capacities of 500 to 2000 m³/h, are available in both configurations, including the possibility of replacing the aluminium heat exchanger for a cellulose energy exchanger, except for the smallest 250 m³/h units, which is only available for KPI energy recovery units

Energy recovery exchanger
(used also in KPI active units)



Heat recovery exchanger



Once installed, the transformation from a heat recovery unit to an energy recovery unit is allowed by the direct change of the heat exchanger element. The change can be done without uninstalling, by the main service cover.

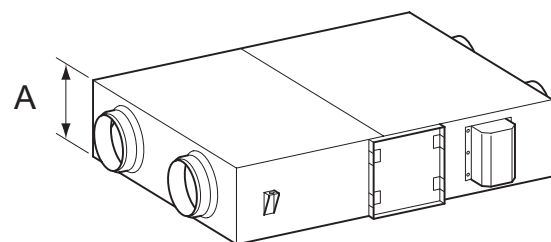
i **NOTE**

- *Replacing energy recovery exchanger in a KPI-(502-2002)E3E or in a KPI-(502-1002)X3E for a heat recovery is not allowed due to condensates. This range of KPI does not include condensates plate.*
- *Once installed the transformation from Heat Recovery unit to an Energy Recovery unit is allowed by the direct change of the heat exchanger element. The change can be done by the main service cover without uninstalling the unit.*
- *The change from an Energy Recovery series unit to its Heat Recovery series equivalent unit is not allowed.*

Compact units

- KPI units were designed to optimise their weight and height and, as a result, making their transport and handling easier. Furthermore, they involve less installation space requirements and can be easily installed in a suspended ceiling like any other indoor unit.

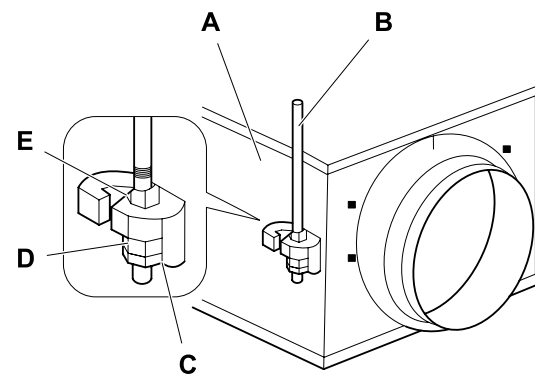
Model	A
252	270
802 / 1002	330
1502 / 2002	525



Easy to install

The HITACHI KPI units are safe and easy to install. They are fitted with four attachment hooks for direct installation and a flange to seal the duct connection to the unit.

- A: KPI unit.
- B: sling bolt.
- C: rubber insulation.
- D: washer.
- E: lock nut.



2

Energy Recovery series vertical installation

Vertical installation is allowed for Energy Recovery series units. The unit should be properly fixed to avoid its movement once installed. Must be guaranteed that any liquid can't flow into the unit.

Even though vertical installation is allow, transportation must follow handling instructions to avoid the damage of any component.

Vertical installation is not allowed in case of Active KPI or Heat Recovery series.

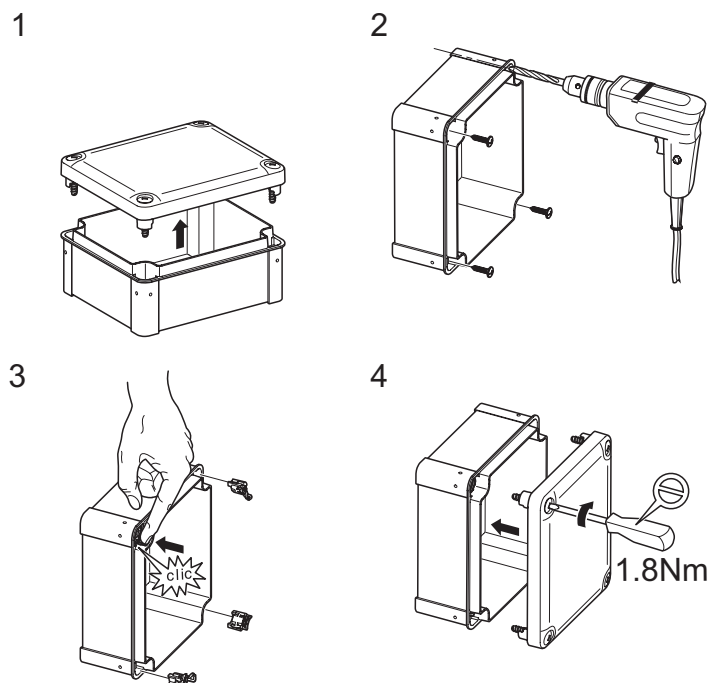
◆ DX-Interface series 1

Installation facilities

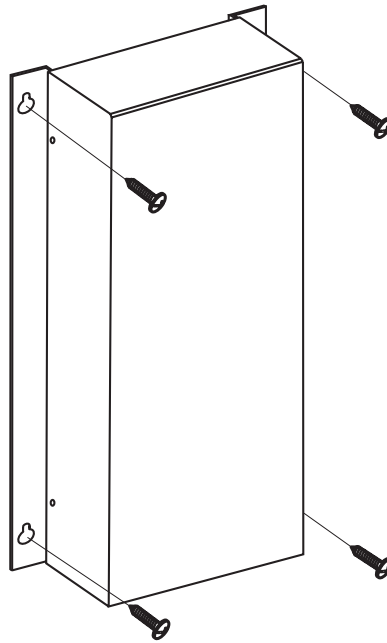
Thermistors are supplied into the DX-Interface kit to be installed into the unit to be controlled (two thermistors for air –inlet and outlet of the dx-coil- and two for piping – liquid pipe and gas pipe-). The connections of the thermistors must be done in the field. Correct thermistors installation must be guaranteed for a proper DX-Interface sensing and thermodynamic control.

The installation of the control box must be done through the 4 openings located on the corner of the casing.

Once installed it is necessary to place the 4 feet supplied with the control box into the corners in order to fix the cover.



On the other hand the expansion valve boxes have been designed to be installed directly from the front side.



Installation outdoor

DX-Interface control box and expansion valve terminal boxes are designed to allow the installation outdoors, by using special ABS material casings (temperatures allowed up to 650 °C) with sealed covers that guarantee an IP66 between the casing and the cover.

NOTE

This IP grade could be reduced due to the product modifications for this specific application.

Safe Wires Installation

In order to keep as high as possible the insulation, packing clamps have been used in both casings, providing an easy and safe installation of the external wiring.

Easy Piping Installation

Expansion valves pipes are designed for the use of unions, as most of Hitachi indoor units, which makes the installation fast and easy.

2.2.3 Easy and flexible communication between units

◆ Complete communication

The indoor units maintain active communications between them, with the outdoor units and with the control systems over a communication line (bus) called H-LINK II. This way the performance of each unit, among other aspects, is adapted to the circumstances at all times and remains the most appropriate in each situation.

◆ H-LINK II bus

Easy connection

The communication bus is formed by a pair of small-diameter cores with no specific polarity. Given that no multi-way communication cables are used, the installation is simple, fast and effective. The connections cannot be confused.

The two-core non-polarity communication bus provides significant savings in terms of materials and installation, as the same cable is used for all the units and is quickly and simply connected directly to them.

Long distance

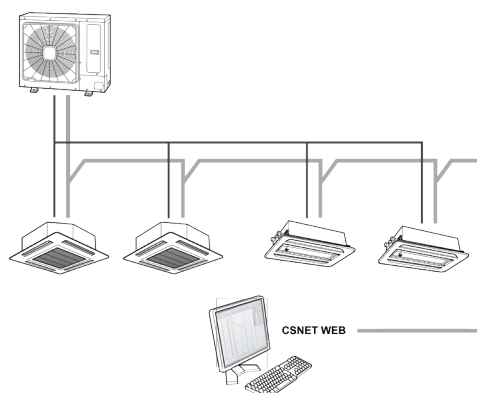
The total length of the communication bus between all the units can reach 1000 m. If the communication line must be longer (e.g. to expand the air conditioning system or to manage the units from a unified station in the building), the total distance can be extended to 5000 m by using the accessories available.

Up to 160 units connected together in a single H-LINK II bus line.

It is possible to connect up to 160 indoor units from the SYSTEM FREE range in a single H-LINK II bus line. To expand the installation or increase the bus lines available, simply add a new line.

All units are managed as one through the control systems installed.

Example of the H-LINK II system:



2

Specifications:

Transmission cable:	2 conductors
Transmission cable polarity:	No polarity
Maximum number of outdoor units connected:	64 units per H-LINK II system
Maximum number of indoor units connected:	160 units per H-LINK II system
Maximum number of units:	200
Maximum wiring length:	Total 1000 m (including CSNET-WEB)
Recommended cable:	Shielded twisted pair cable or shielded pair cable over 0.75 mm ² (equivalent to KPEV-S)
Voltage:	5 V DC



NOTE

- When the H-LINK II bus is used, the DIP switches must be adjusted. Otherwise, or if incorrectly adjusted, a transmission problem may occur.
- The H-LINK II system offers great flexibility for the design of air conditioning systems, as installation is simple and the total cost affordable. Furthermore, centralised management is possible by connecting the CSNET-WEB system to the H-LINK II network cables.
- Additionally, it is possible to manage the installation over the internet using the CSNET-WEB.

Fast connection of new units

Extending the air conditioning system is now even easier. To add new units to the communication bus, simply connect its two cores to the communication terminals.

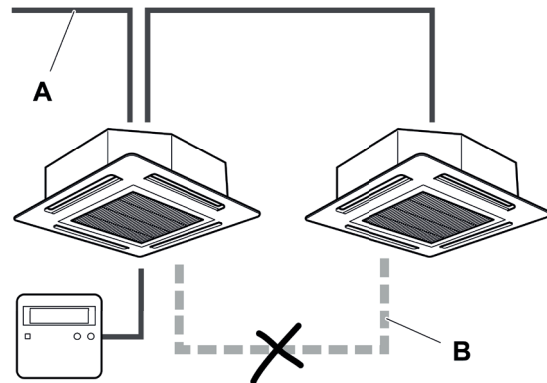
The new units added to the bus line are recognised by the control system and are automatically configured.

No operating cable for the remote control (simultaneous operation setting)

In the case of several indoor units systems, the indoor units with simultaneous operation setting can be controlled by a single remote control, without having to be connected together using a specific control cable.

A: service cable.

B: Specific cable for operating the remote control unnecessary.

**Auto-configuration of system units**

The air conditioning system control systems are auto-configuring. They recognise the type of unit they are connected to, along with the type of indoor unit and its capacity. The installation is started quickly and efficiently.

It is also possible to configure all units manually to adjust the installation in line with personalised parameters.

2.3 Start-up benefits

2.3.1 Automatic start-up

The installation is started up automatically, therefore considerably reducing the time required for the process.

There are three types of start-up:

- Test run and identification of the units forming the system.
- Test run from the remote control.
- Test run from the outdoor unit.

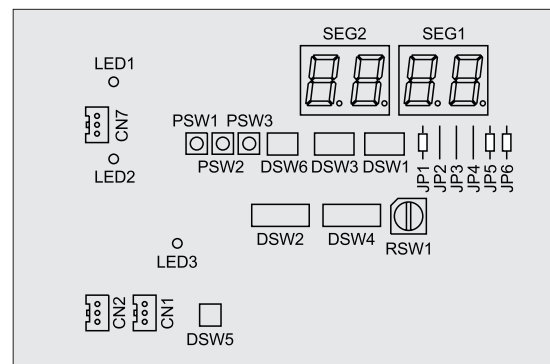
◆ Test run and identification of the system units

The test run can be carried out from either the rotating DIP switches on the outdoor unit or from the remote control for the indoor unit.

The seven-segment indicator on the outdoor unit provides all of the information required to check the system is operating properly.

The units forming part of the system are identified separately for the outdoor and indoor units:

- Outdoor units: the remote control can be used to allocate the series to which the operational outdoor units belong (e.g. single or multiple series).
- Indoor units: using the rotating DIP switch on each unit.



◆ Test run from the remote control

Three operations for the test run are possible from the remote control:

- 1 Auto-diagnostic: quick check of the operating conditions of the indoor units and outdoor unit.
- 2 Data memory query: in the event of an alarm, the remote control saves all the operating parameters of the unit at that particular time and the screen displays the corresponding fault code. The air conditioning system diagnostic is simple and effective.
- 3 Optional function setting: the remote control is able to make settings on up to 29 possible options, such as the four-degree offset in heating mode or the increase in fan speed. It is possible to set several indoor units at the same time and to modify the unit configuration once installation is complete.



◆ Test run from the outdoor unit

The seven-segment indicator on the outdoor unit displays parameters relating to its working order.

Any incident arising during start-up or normal operation can be diagnosed from the indicator.

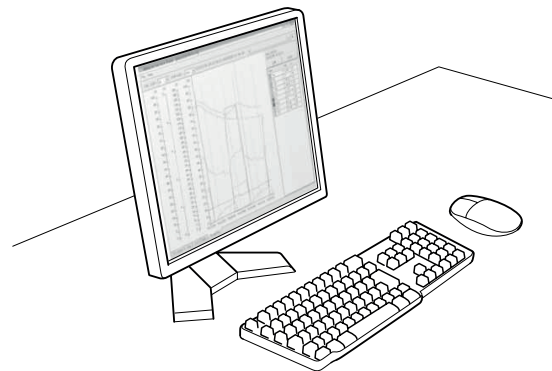
2.3.2 Service verification**◆ System operation control**

The working order of the system is continuously monitored through the control system. All operating parameters that the system uses to manage the outdoor and indoor units are continuously supervised.

◆ Assisted-management air conditioning system

The air conditioning system can be conveniently managed using the HITACHI Service Tools assisted-management software.

This software allows for a laptop, for example, to be connected to the air conditioning system via an interface connected to the H-LINK II bus. Through different menus, the software effectively manages all of the systems connected and obtains data for optimised system performance.

**◆ Compilation of operating data**

All of the data obtained using HITACHI Service Tools is collected in different formats and monitored in several ways. The software user can configure the processing of the data to monitor the parameters of most interest in each installation.

The data reports can be used to continuously check the correct working order of the system. Any deviation in the ranges of foreseen values is immediately detected.

2.4 Functional benefits

2.4.1 Indoor units

The design of the fans in the SYSTEM FREE range of indoor units reduces the friction of the air forced by the blades. The aim is to improve the air discharge and its flowing over the supply blades. The result is a reduction in consumption and in noise emissions from the electric fan motors.

2.4.2 RCI - 4-way cassette and RCIM - 4-way cassette (compact)

New series RCI and RCIM series:

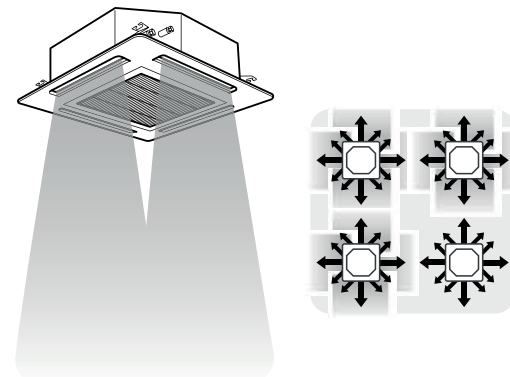
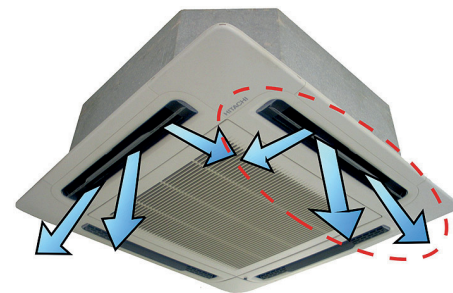
- RCI-(1.0-6.0)FSN3
- RCI-(1.0-6.0)FSN3Ei
- RCIM-(0.8-2.0)FSN2E

◆ General features

- New air supply louver design (for RCI models only)

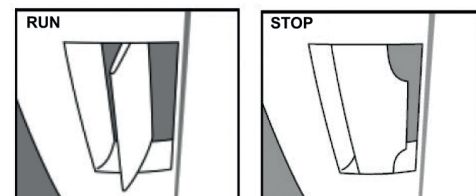
Air outlet design for much more even air distribution, providing greater comfort.

The air flow is provided in a fan shape, becoming wider towards the edges so that the flow of conditioned air is distributed evenly in all directions.



- Intelligent louver closure system

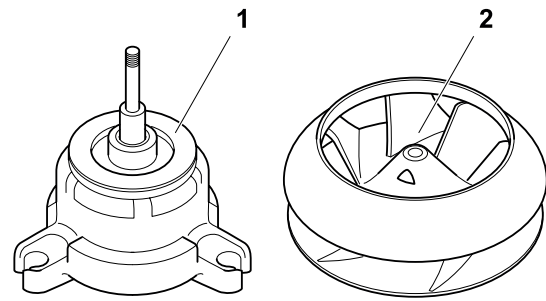
When the unit is stopped, the louvers return to their horizontal position and the air outlet closes to avoid the accumulation of dust or particles of dirt. The louvers closed horizontally give the unit an elegant image when it is switched off.



- Silent running

The low sound pressure level, 32 dB(A) on RCI(1.0-2.5) HP models at high speed is achieved through the use of a new DC motor -1- for the fan and a new vibration-proof structure on the turbo fan shaft -2-. Both parts protect the turbo fan from generating and emitting abnormal noise.

The following table shows the sound pressure levels, expressed in dB(A).



Sound pressure level - Standard operation dB(A)				
Model	Fan speed setting			
	High H	High	Medium	Low
RCI-1.0FSN3	33	30	28	27
RCI-1.5FSN3	35	31	30	27
RCI-2.0FSN3	37	32	30	27
RCI-2.5FSN3	42	36	32	28
RCI-3.0FSN3	42	36	32	28
RCI-4.0FSN3	48	43	39	33
RCI-5.0FSN3	48	45	40	35
RCI-6.0FSN3	48	46	41	37

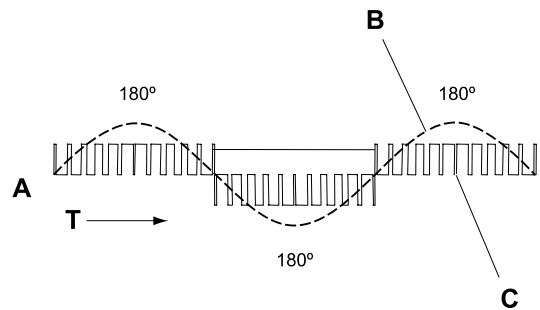
Sound pressure level - Standard operation dB(A)			
Model	Fan speed setting		
	High	Medium	Low
RCI-1.0FSN3Ei	32	30	28
RCI-1.5FSN3Ei	32	30	28
RCI-2.0FSN3Ei	32	30	28
RCI-2.5FSN3Ei	32	30	28
RCI-3.0FSN3Ei	34	32	30
RCI-4.0FSN3Ei	38	35	33
RCI-5.0FSN3Ei	39	37	35
RCI-6.0FSN3Ei	42	40	36

- Drive motors with PWM management

The electric motors in the SYSTEM FREE indoor units are the main beneficiaries of the functional and construction studies carried out. The technologies applied to each type of unit are, of the entire range of possibilities, the most suitable in each case. For example, application of DC motors with PWM (Pulse Width Modulation) management on the supply fans of the RCI(M) models reduces energy consumption by half. In this case, where the range of working hours of the air supply motors is relatively high, a considerable amount of energy is saved.

Furthermore, there is a significant improvement in noise comfort, as the electronic management allows for very precise setting values for each situation.

- A: electricity.
- B: current.
- C: voltage.
- T: time.



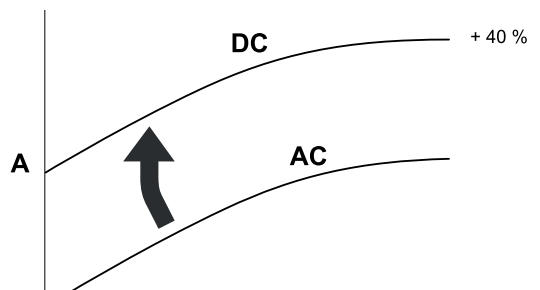
2

- Reduced current consumption thanks to the use of DC motors

- A: motor efficiency (%).
- DC: direct current motor.
- AC: alternating current motor.

In comparison with conventional products that use an AC motor, the DC fan motor significantly improves operating efficiency. Furthermore, DC motor rotation speed management means that the formation of gusts in the forced air are reduced.

The motor is fitted with a rotor with a ferrite magnetic surface, a centralised coil and a split core to reduce electricity consumption. All aspects of motor efficiency have been improved: it is 50% smaller and lighter than the motors used in conventional units.



2.4.3 RCI-(1.0-6.0)FSN3 - 4-way cassette

New 4-way cassette and two optional Air panels is offering the following benefits:

Benefits	Outline
Improvement of Energy-Saving (1) The high performance heat exchanger, the high efficient turbo fan and the new DC drain pump are adopted. (2) The energy-saving is improved by the air panel with the motion sensor.	The energy-saving is improved by developed the new heat exchanger and the turbo fan, and adopting the motion sensor.
Adopting New Structured Silky Flow Louver	It softens the discomfort by temperature irregularity and cold draft.
Flexibility of Installation to High Ceiling	The air flow volume "HIGH H" is added which is larger than "HIGH".
Drain Pan: Adopting New Antibacterial Agent and Larger Diameter of Drain Plug	Inhibit the generation of slime, and the maintainability is improved.

i NOTE

Hitachi recommends PC-ARF remote control (optional) in order to obtain the maximum RCI-(1.0-6.0)FSN3 performance.

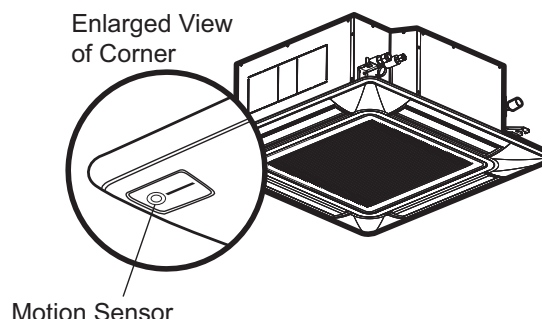
◆ Air Panel options

RCI-FSN3 - 4-way cassette indoor units have available two optional Air Panel:

- P-AP160NA1 without motion sensor.
- P-AP160NAE with motion sensor

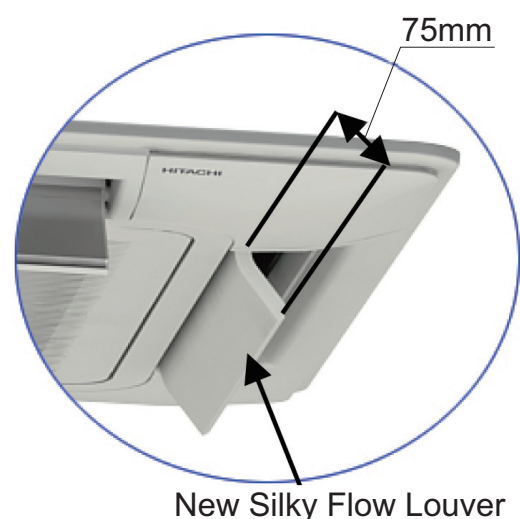
◆ Improvement of Energy Saving

- Adopting High Performance Heat Exchanger, High Efficient Turbo Fan and New DC Drain Pump.
The high energy-saving operation is realized to adopt the high performance heat exchanger with the small diameter pipe (ø5 mm), the turbo fan with 3D twisted blade and the electrical power saving drain pump with DC motor.
- Improvement of Energy-Saving Operation by adopting Air Panel with Motion Sensor.
- Adopting Motion Sensor Function.
 - The motion sensor function can adjust the setting temperature according to the human activity, and it controls the air flow volume and the air flow direction.
 - The energy-saving is improved by combining the motion sensor function and the individual operating function comparing with the standard operation.



◆ Adopting New Structured Silky Flow Louver

The new structured silky flow louver is adopted to soften the discomfort by the temperature irregularity and the cold draft. The individual control setting for each louver is available



◆ Individual control setting for each louver

The individual control setting for each louver is available through the PC-ARF remote control menu, allowing to select easily the louver direction for each ones of the four louvers. Refer to the PC-ARF Installation and Operation Manual.

◆ Flexibility of Installation to High Ceiling

The air flow volume setting function "HIGH H"⁽¹⁾ is adopted to existing air flow volumes of "HIGH", "MED" and "LOW".

i NOTE

⁽¹⁾ With PC-ARF and PC-LH3B remote control switch (Hi2 in PC-LH3B screen).

The 4-way cassette type is used 5 internal mode as HH2, HH1, Hi, Me and Lo. If the high speed 2 setting (02) is selected through the optional functions C5 from the remote control switch, the air flow volume of "HIGH 2" and "HIGH" will be equaled as shown in the table, because the air flow volume, "HIGH H" and "HIGH" are used as "HH2" in high speed 2 setting.

High Speed Mode (C5)	Air flow volume mode selected by remote controller			
	HIGH H	HIGH	MED	LOW
Standard (00)	HH2	Hi	Me	Lo
High Speed 1 (01)	HH2	HH1	Hi	Me
High Speed 2 (02)	HH2	HH2	HH1	Hi

In the case of using the optional filter (except the long life filter), the high speed mode setting is required.

◆ New antibacterial agent and larger diameter of drain plug

- The silver ions antibacterial agent is newly adopted in the drain pan, and it inhibits generation of mold or bacterium which is the cause of slime. The antibacterial agent (cased) is fixed in the drain pan (Exchangeable, term of validity is 10,000 hours of the cooling operation (Approx.5 years)).
- The maintainability is improved because the drain plug diameter is changed from $\varnothing 10$ to $\varnothing 22$.



2

◆ New motion sensor control

The air conditioning capacity is saved automatically depending on a situation and detecting amount of human activity by adopting the motion sensor on the corner of the air panel.

The energy-saving can be improved more with the individual operating function. In addition, the operation can be stopped automatically if the absent situation continues for more than 30 minutes ⁽¹⁾.

The motion sensor allows maintaining the comfortable indoor environment and eliminating the unnecessary operation ⁽²⁾.

The motion sensor control adjusts automatically the following items depending on a situation:

- Setting temperature: is adjusted 1 °C or 2 °C for energy saving.
- Air flow volume: is adjusted to lower one volume of to "Slo" (except during the dry operation).
- Air flow directions: is adjusted to horizontal.

i NOTE

- ⁽¹⁾: The default setting is "30 minutes". However, the setting is changeable.
- ⁽²⁾: The default setting is "Running Operation". However "Automatic Stop" can be selected by setting from the remote control switch.

◆ Main characteristics

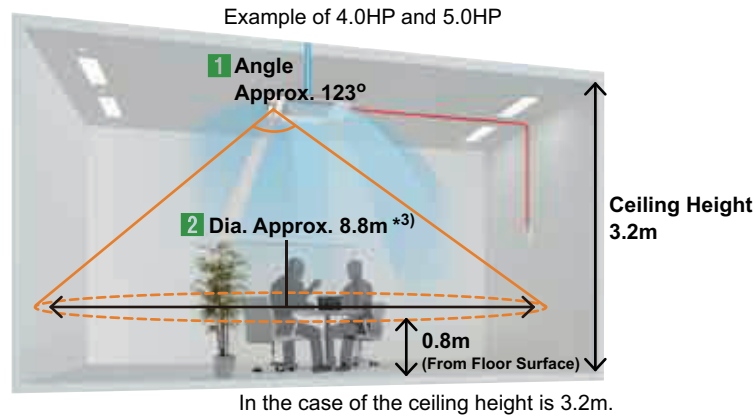
- Detecting Angle: Approx 123°
- Detecting Area for Human Activity

RCI-(1.0-3.0)FSN3	RCI-(4.0-6.0)FSN3
Detecting diameter: approx. 7 m ⁽³⁾ (0.8m...height from floor surface)	Detecting diameter: approx. 8.8 m ⁽³⁾ (0.8m...height from floor surface)

i NOTE

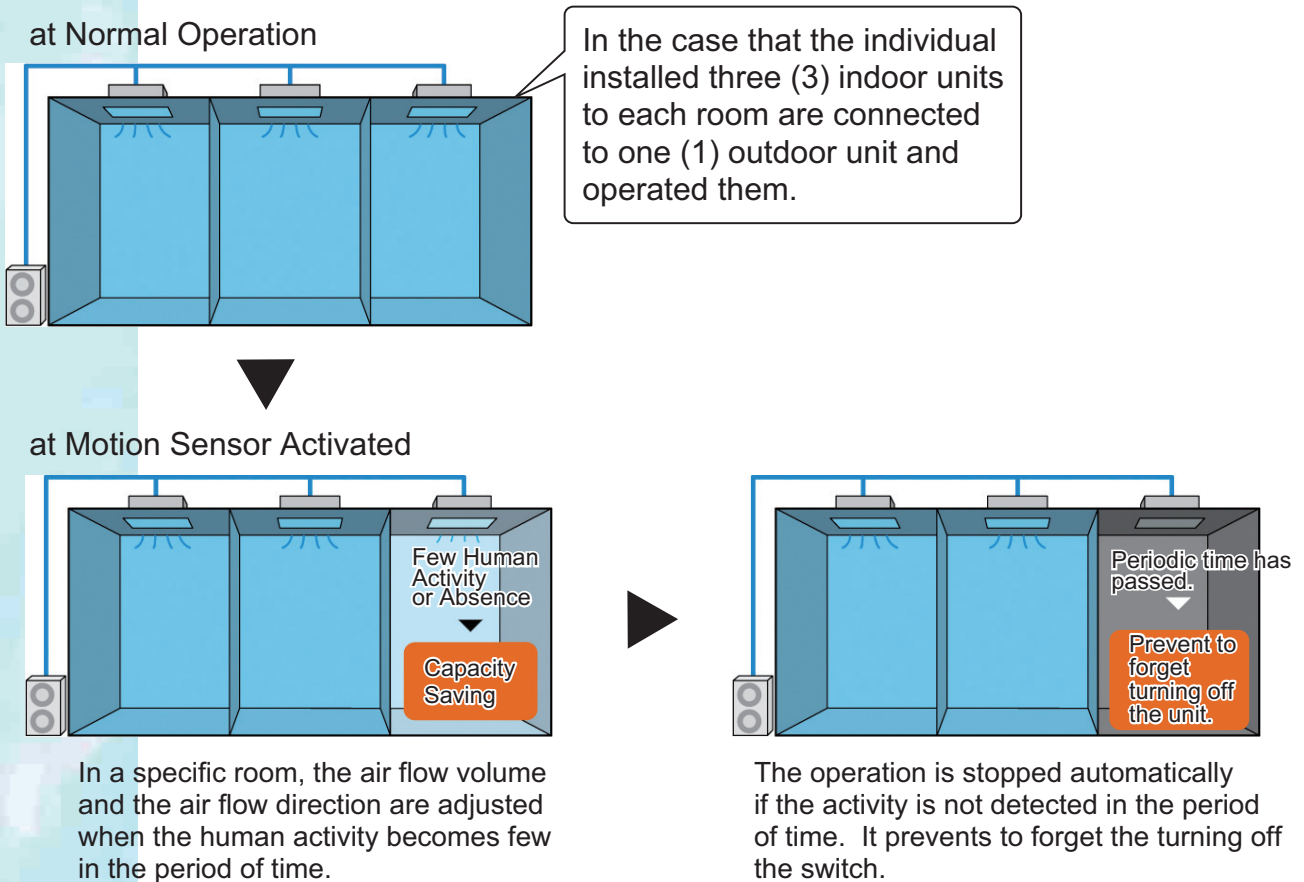
⁽³⁾: The detecting area becomes smaller if the human motion is few such as stretching on a chair etc. The detecting diameter will be changed to approximately 6.0 m.

Detecting Area



Notice about motions sensor

- 1 The motion sensor detects the human activity. However, if someone is in a room with a bit motion, the motion sensor may detect as absence.
- 2 The motion sensor may detect as human activity, if the indoor unit with the motion sensor is installed near a moving object which is different temperature against atmosphere.
- 3 The motion sensor may detect as absence in the case that the indoor unit with the motion sensor is installed to a high ceiling (higher than 4 m) even if someone is in a room.
- 4 The motion sensor may detect as absence and the operation may be stopped in the case of staying for long time with a bit motion.
- 5 In the case that the indoor units are operated by 2 remote control switches, the motion sensor setting is available only from the main remote control switch.

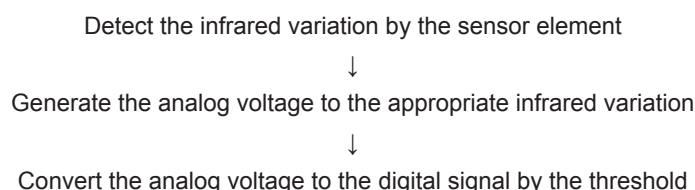


◆ **Effect of Energy-Saving by Motion Sensor**

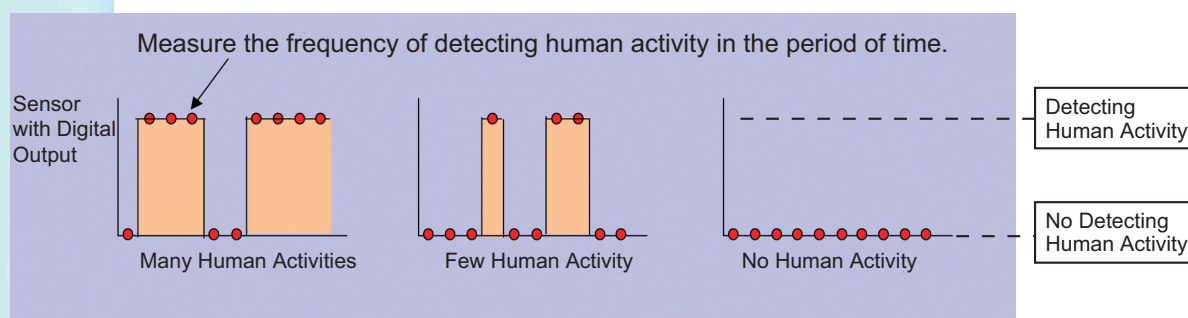
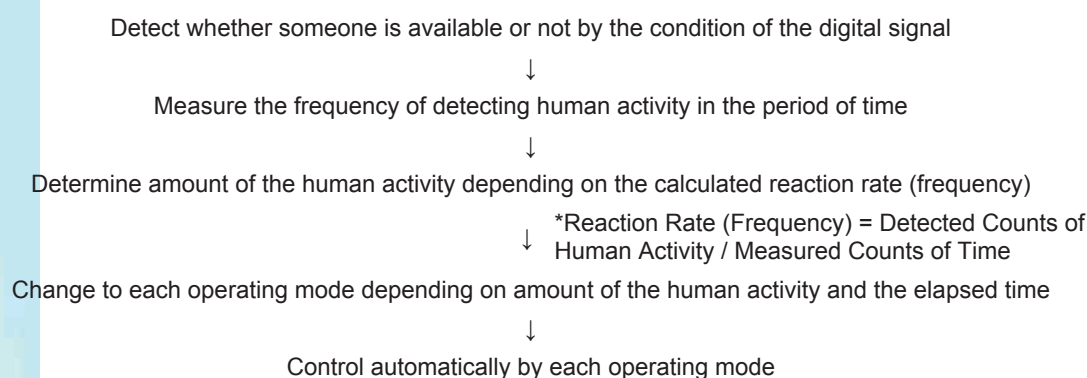
In the case of the motion sensor being set as “ON” by the remote control switch and comparing with the temperature setting before adjusting the operation as shown below (at cooling mode):

- The power consumption can be reduced max 7% by adjusting 1 °C increased.
- The power consumption can be reduced max 14% by adjusting 2 °C increased.

◆ **Sequence of Detection by Motion Sensor**



◆ **Sequence of Controlling Motion Sensor at Indoor Unit**



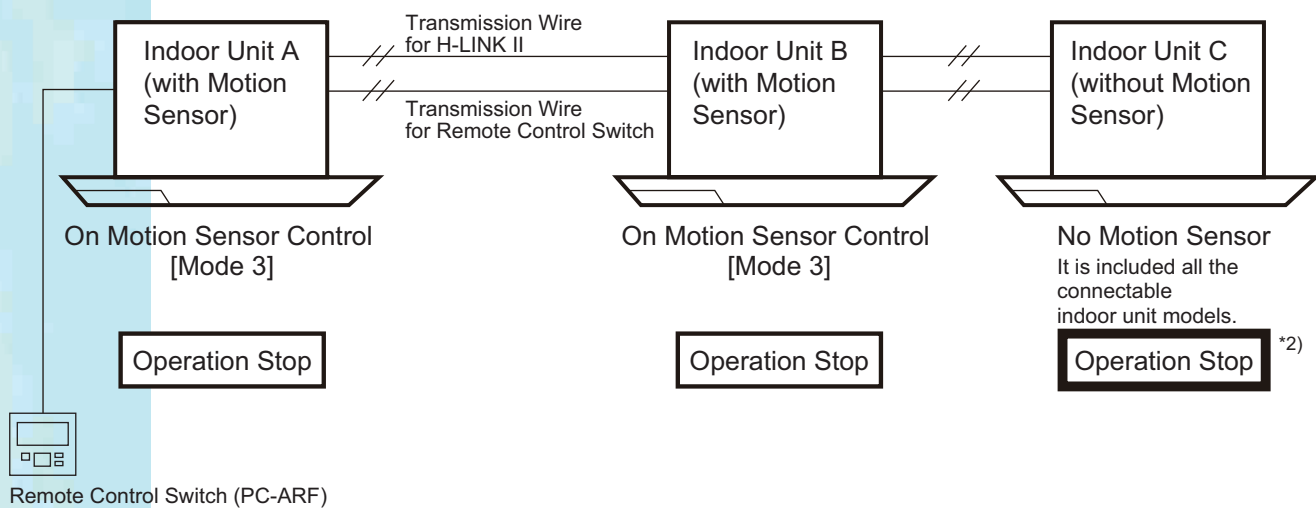
◆ **Descriptions of Motion Sensor Control Condition**

		Condition					
		Standard Operation	MODE 1	MODE 2	MODE 3		
MENU on Remote Control Switch	“If Absent”	–	–	–	Running Operation	Standby	Stop ⁽¹⁾
Indoor Unit adjusting value	Temperature Setting	Adjusting 0 °C	Adjusting 1 °C	Adjusting 2 °C		Forced Thermo-OFF	Same Condition as Standby
	Air Flow Volume	Setting Air Flow Volume		Setting Air Flow Volume-1 (Min: Low)			
	Air Flow Direction	Set Air Flow Direction	Horizontal	Horizontal		Horizontal	

i NOTE

⁽¹⁾: The remote control switch will make to stop the operation when all the indoor units with the motion sensors switch to “MODE 3”. After the operation is stopped, the operation will not restart even if detecting the human activity due to stopped by the remote control switch. The indoor unit without the motion sensor and the indoor unit with the motion sensor can be mixed. In this case, the indoor unit without the motion sensor will also stop as shown in the figure below ⁽²⁾.

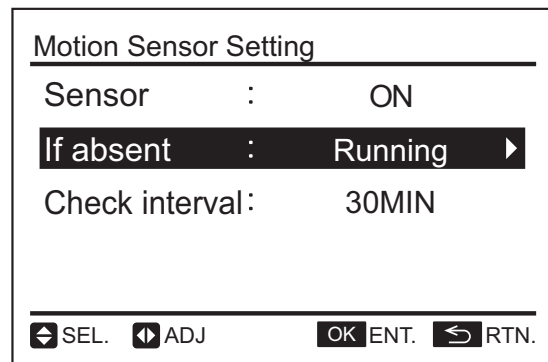
In the case of the motion sensor setting “If Absent: OFF” is set by the remote control switch.



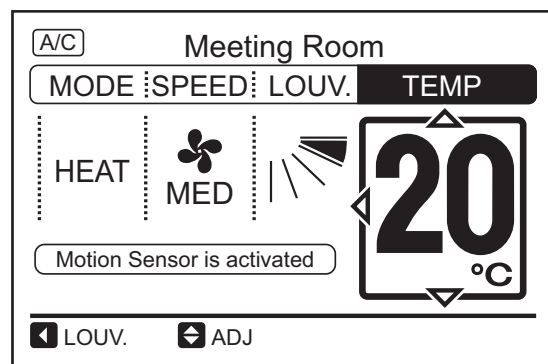
◆ **Motion sensor setting through PC-ARF Remote Control switch**

The motion sensor setting is easy by the remote control switch. The indication of “Motion sensor is activated” is displayed on the remote control switch LCD during controlling the motion sensor.

- 1 Sensor**
 - ON: The operating control function by the motion sensor is activate.
 - OFF: The operating control function by the motion sensor is not activate.
- 2 If absent**
 - Stop: The operation is stopped by the remote control switch when all the indoor units with motion sensor detect absence which are connected with same remote control switch.
 - Stand-by: The operation mode is the fan operation at “Slo” speed.
- 3 Check interval**
 - The motion sensor detects an absence at selected check interval time, the function “If absent” will be executed. The interval can be selected from 30, 60, 90, 120 or 180 minutes (The default setting is 30 minutes).



“Motion sensor is activated” is displayed on the remote control switch LCD during capacity saved operation or operation stopped by the motion sensor control.




NOTE

If the function "Prohibiting operation by remote control switch" is used from the centralized controller, select the command "Running" or "Stand-by" in "If absent" at the motion sensor control setting. If "Stop" is selected, the motion sensor control can not be performed correctly as follows.

- In the case that "Stop" is selected in the motion sensor control setting and "Prohibiting operation by remote control switch" (for all items) is set by the centralized controller, the operation will not be stopped even if the motion sensor control function changes to the stoppage condition.
- In the case that "Stop" is selected in the motion sensor control setting and "Prohibiting operation by remote control switch" (for part of items) is set by the centralized controller, the indoor unit operation can not be restarted from the centralized controller although the operation can be stopped under the stoppage condition by the motion sensor control function

2

2.4.4 RCIM-(0.8-6.0)FSN2 - 4-way cassette (compact)

◆ Expanded line-up

Added smaller capacity 0.8HP and for this model is added DSW for special 0.6HP setting that can be used with Set Free Mini series 2. With this Dip switch setting the air flow of the unit is modified to be adjusted to 0.6 HP capacity.

◆ Sound level improvement

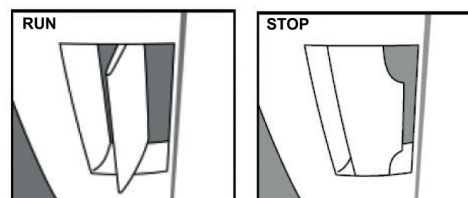
Significant improvement for sound data has been achieved (reduction -4dB(A) at low speed) for 1.0HP units

Model	Sound pressure level		
	Standard operation dB(A)		
RCIM-0.8FSN2	36	34	28
RCIM-1.0FSN2	36	34	28
RCIM-1.5FSN2	38	35	33
RCIM-2.0FSN2	42	39	37

2.4.5 RCD - 2-way cassette

- Intelligent louver closure system

When the unit is stopped, the louvers return to their horizontal position and the air outlet closes to avoid the accumulation of dust or particles of dirt. The louvers closed horizontally give the unit an elegant image when it is switched off.

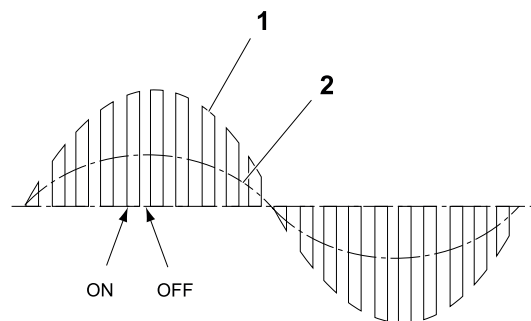
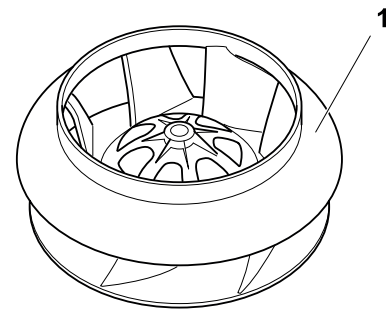


- Silent running

One of the factors contributing towards the development of the HITACHI silent indoor units is the compact turbo fan of the RCD model. Unlike conventional units, the sound level has been reduced to exceptionally low levels of 38 dB-A in the high-speed 3 HP unit.

The new alternating current control with PWM (Pulse Width Modulation) control manages the motor rpm to eliminate any electromagnetic noise, an ideal factor when silent running is sought. The motor power supply is cut and restarted at high frequency (20 kHz), which means that it switches on and off 20000 times per second. As a result, the wave pattern is almost sinusoidal, torque fluctuation is very low and a notable reduction in electromagnetic noise is achieved.

The following table shows the sound pressure levels, expressed in dB(A).



Sound pressure level			
Model	Standard operation dB(A)		
	High	Medium	Low
RCD-1.0FSN2	34	32	30
RCD-1.5FSN2	35	32	30
RCD-2.0FSN2	35	32	30
RCD-2.5FSN2	38	34	31
RCD-3.0FSN2	38	34	31
RCD-4.0FSN2	40	36	33
RCD-5.0FSN2	43	40	36

2.4.6 RPC - Ceiling

- Automatic louver

RPC units are fitted with an automatic swing louver to ensure even air distribution.

2.4.7 RPI, RPIM - Indoor ducted unit

- Silent running

The innovative ventilation unit that combines an optimised design with the use of new materials for a significant reduction in operating noise. The HITACHI RPI(M) units are among the most silent in the market.

The following table shows the sound pressure level of the different models.

Sound pressure level				
Model	External Static Pressure	Standard operation dB(A)		
		High	Medium	Low
RPI-0.8FSN4E	SP-00	33	31	29
RPI-1.0FSN4E	SP-00	33	31	29
RPI-1.5FSN4E	SP-00	34	31	29
RPI-2.0FSN4E	SP-02	29	29	27
RPI-2.5FSN4E	SP-02	30	30	28
RPI-3.0FSN4E	SP-02	31	31	29
RPI-4.0FSN4E	SP-00	37	35	32
RPI-5.0FSN4E	SP-01	38	35	33
RPI-6.0FSN4E	SP-01	39	36	33
RPI-8.0FSN3E	SP-00	54	54	51
RPI-10.0FSN3E	SP-00	55	55	52

- Fan speed optimization at each static pressure level on RPI(M)-(0.8-6.0)FSN4E models
For RPI units, function C5 is used to change the static pressure.

C5 setting condition	
00	Standard static pressure (factory set)
01	High static pressure
02	Low static pressure

2.4.8 RPI(M)-(0.8-6.0)FSN4E - Indoor ducted unit

◆ New RPI(M)-(0.8-1.5) HP models

New series RPI(M)-FSN4E has been designed with a new DC-Fan motor.

The intelligent DC-Fan Motor control which keeps always the Air Volume constant giving the best comfort to the customer even when the Air Filter is capped by dust or in those installations where there is any damper system which makes External Static Pressure variations.

Advantajes:

Low power consumption

Which means efficiency improvement

	RPI-FSN4E (Low profile)	RPIM-FSN4E (Hotel type)
Input power reduction	-40%	-70%

Sound level improvement

New “Low” fan speed, and better fan speed distribution for the lowest sound, mainly in site with very short duct.

Unit power		RPI-FSN4E (Low profile)			RPIM-FSN4E (Hotel type)		
		Fan speed					
		High	Medium	Low	High	Medium	Low
0.8HP	Before	33	33	30	31	31	27
	New	33	31	29	31	29	27
1.0 HP	Before	33	33	30	31	31	27
	New	33	31	29	31	29	27
1.5 HP	Before	34	34	31	33	33	29
	New	34	31	29	33	30	28

Expanded combinability

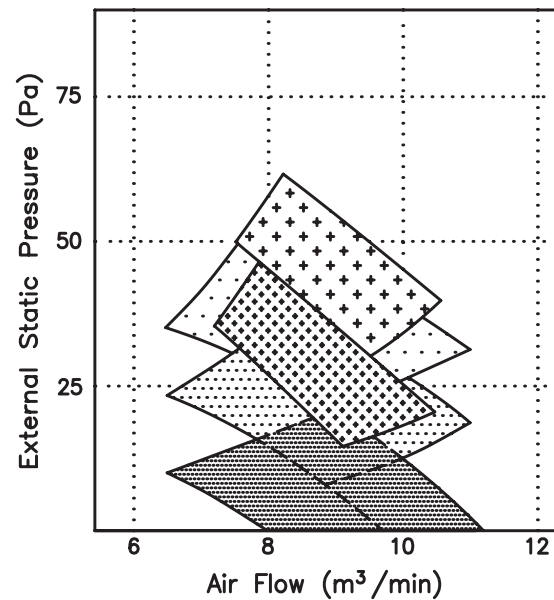
For RPIM-0.8FSN4E is added DSW for special 0.6HP setting that can be used with Set Free Mini series 2. With this Dip switch setting the air flow of the unit is modified to be adjusted to 0.6 HP capacity.

Higher flexibility in the site

- Fan Speeds have been improved by better distribution at lower External Static Pressure area.
- New Remote Control Switch PC-ARF and PC-LH3B allows getting an additional High Fan Speed ("HIGH H" in PC-ARF screen and "Hi2" in PC-LH3B screen) which provides additional adaptability of the unit in those installations with Low External Static Pressure and high Air Volume requirement.

- New Low ESP Working Range area (not available in previous model).
- New Silent “Low” Fan Speed which allows working with very short ducts or without duct.

EXAMPLE OF RPI-1.5 WORKING RANGE IMPROVEMENT

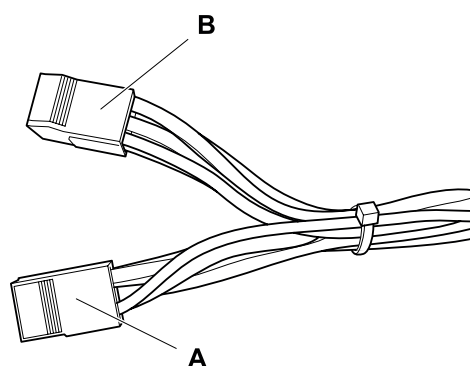


- Simple adjustment of static pressure on RPI-(8.0-10.0)FSN3E models

The fan motor in RPI-(8.0/10.0)FSN3E units can be configured in two different ways:

- A: connector CN24 LSP (Low Static Pressure); (factory supplied).
- B: connector CN25 HSP (High Static Pressure).

The LSP configuration enables the unit to run in low-demand mode. It is used in installations with short ventilation ducts. The HSP configuration enables the unit to run at a high static pressure with the same airflow. This configuration is suitable in installations with long ventilation ducts.



2

To keep the unit operation noise level as low as possible, it is extremely important to adapt the unit to the type of ventilation ducts available.

The fan motor in the unit is fitted with a dual power connector in the electrical box. Fitters can set the most appropriate static pressure during unit installation.

The fan motor in the unit is factory-supplied set to work at low static pressure. If the unit is built into an installation with long ventilation ducts, the unit must be adapted to work at a high static pressure. To do so, simply replace the motor power connector identified as CN24 (factory-connected for operation at low static pressure, LSP) with the high-pressure connector CN25 (operation at high static pressure, HSP).

2.4.9 RPK - Wall type

◆ Adoption of Air Flow Volume "HIGH H"

The air flow volume setting function "HIGH H" is adopted to existing air flow volumes of "HIGH", "MED" and "LOW". As a result, high speed mode setting by the remote control switch is not required in the case of high ceiling.

Current Model	Added	New Model	Supported Ceiling Height								
<table border="1"> <tr><td>HIGH</td></tr> <tr><td>MED</td></tr> <tr><td>LOW</td></tr> </table>	HIGH	MED	LOW	→	<table border="1"> <tr><td>HIGH H</td></tr> <tr><td>HIGH</td></tr> <tr><td>MED</td></tr> <tr><td>LOW</td></tr> </table>	HIGH H	HIGH	MED	LOW	High Speed Mode (C5 setting)	Air Flow Volume Mode
HIGH											
MED											
LOW											
HIGH H											
HIGH											
MED											
LOW											
			Standard (00)	HIGH H							

i NOTE

- 1 The Wall type indoor unit is used 5 internal mode as HH2, HH1, Hi, Me and Lo. If the high speed 2 setting (02) is selected through the optional functions C5 from the remote control switch, the air flow volume of "HIGH 2" and "HIGH" will be equalled as shown in the table. Because the air flow volume, "HIGH H", and "HIGH" are used as "HH2" in high speed 2 setting.

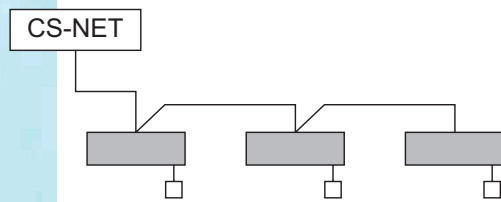
High Speed Mode (C5)	Air Flow Volume Mode			
	HIGH H	HIGH	MED	LOW
Standard (00)	HH2	Hi	Me	Lo
High Speed 1 (01)	HH2	HH1	Hi	Me
High Speed 2 (02)	HH2	HH2	HH1	Hi

- 2 In the case of using the optional filter (except the long life filter), the high speed mode setting is required.

◆ **Improvement for Centralized Control**

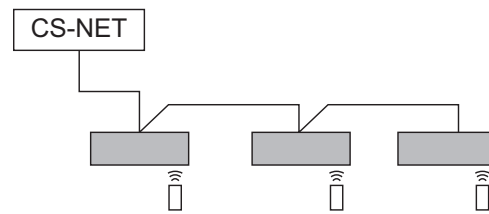
The wired remote control switch is NOT required at the centralized control when each indoor unit is controlled by each wireless remote control switch.

Current Model



Wired remote control switch is required.

New Model



Wired remote control switch is NOT required.

◆ **Sound level improvement**

Significant improvement for sound data has been achieved with a reduction of -4dB(A) at low speed, -4dB(A) at medium speed, -3dB(A) at high speed for 0.8 and 1.0 HP.

Model	Sound pressure level			
	Standard operation dB(A)			
	High H	High	Med	Low
RPK-(0.8-1.0) FSN(H)3M	39	35	32	30
RPK-1.5FSN(H)3M	46	40	36	33

Higher flexibility in the site

New Remote Control Switch PC-ARF and PC-LH3B allows getting an additional High Fan Speed ("High H") which provides additional adaptability of the unit in those installations with high Air Volume requirement.

Model	Air Flow (m ³ /min)
	(High H speed setting)
RPK-(0.8-1.5)FSN(H)3M	10
RPK-1.5FSN(H)3M	14

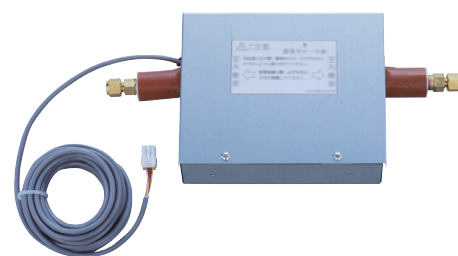
◆ **Separated electronic expansion valve for a more silent operation on RPK-(0.8-1.5)FSNH3M**

The flow of refrigerant circulating through the expansion valve is, due to the nature of its operation, responsible for some of the level of sound emissions of the indoor units. The operating noise is occasionally produced, particularly during unit start-up, when the number of indoor units running varies or when heating mode is activated at very low outdoor temperatures.

The RPK-(0.8-1.5)FSNH3M units are not fitted with the electronic expansion valve on the inside, although this can be installed independently in the surrounding area, at a sufficient distance from the unit to eliminate the disturbance. The unit is not affected by the factors described above and, therefore, its operation is more silent.

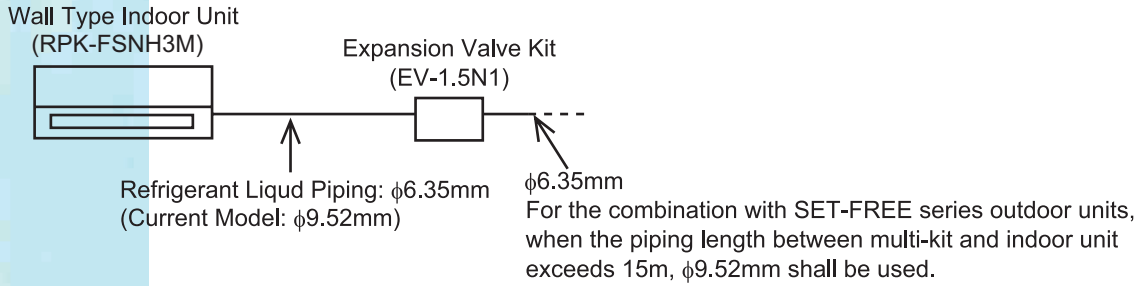
In places where a low noise level is required or desired, e.g. in hotel rooms where the noise of the refrigerant flow may be bothersome, the RPK-(0.8-1.5)FSNH3M units provide a simple, effective solution while offering the necessary flexibility for a noise-free installation.

The expansion valve can be installed, for example, in the false ceiling or in a different room to that of the indoor unit. The valve is supplied in kit form, with the necessary connections for the refrigerant pipes.



New Expansion valve Kit (EV-1.5N1)

New wall type indoor unit without expansion valve adopts the refrigerant liquid piping size $\phi 6.35$ which is same as the standard wall type indoor unit though the refrigerant liquid piping size for current model is $\phi 9.52$. For the combination with SET-FREE series outdoor units, the restriction for total piping length between indoor unit and expansion valve kit has been changed as well as the calculation for additional refrigerant charge quantity.



2

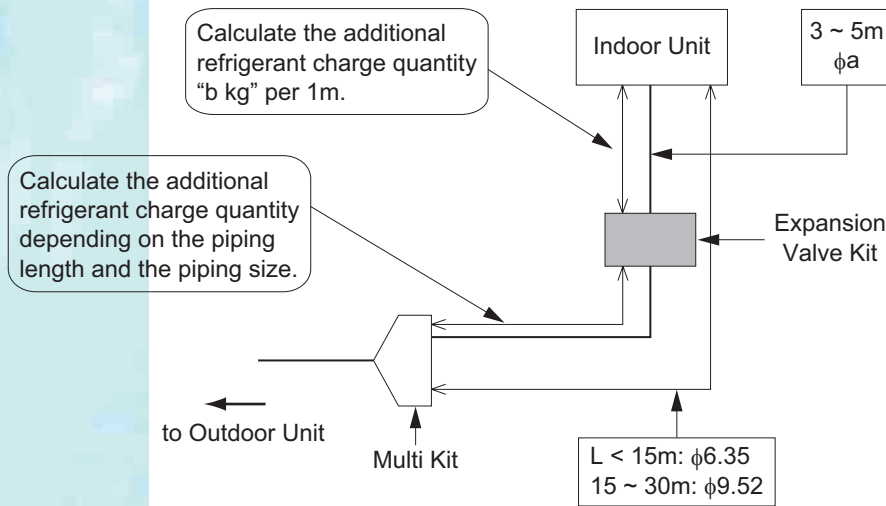
For using RPK-FSNH3M (Wall Type indoor units without expansion valve) and expansion valve kit, the installation work shall be performed with followings.

(1) For RPK-FSNH3M (Wall Type indoor units without expansion valve), the total piping length between expansion valve kit and indoor unit is restricted as shown in the table below.

(2) For SET-FREE series outdoor units, the appropriate refrigerant quantity is required to be additionally charged depending on the piping length and the piping size. When the additional refrigerant charge quantity at connected liquid pipe is calculated, calculate the following additional refrigerant quantity each.

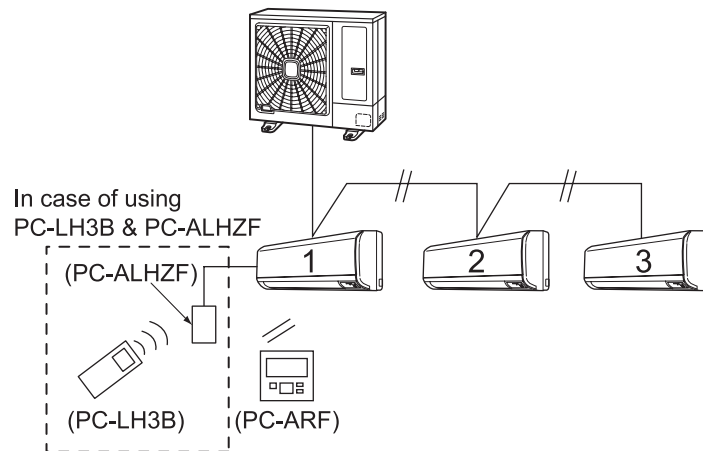
- * Quantity for Liquid Pipe between Multi-kit and Expansion Valve Kit
- * Quantity between Indoor Unit and Expansion Valve Kit

Total Additional Refrigerant Charge Quantity = Additional Refrigerant Charge Quantity between Multi Kit and Expansion Valve Kit + Additional Refrigerant Charge Quantity between Indoor Unit and Expansion Valve Kit

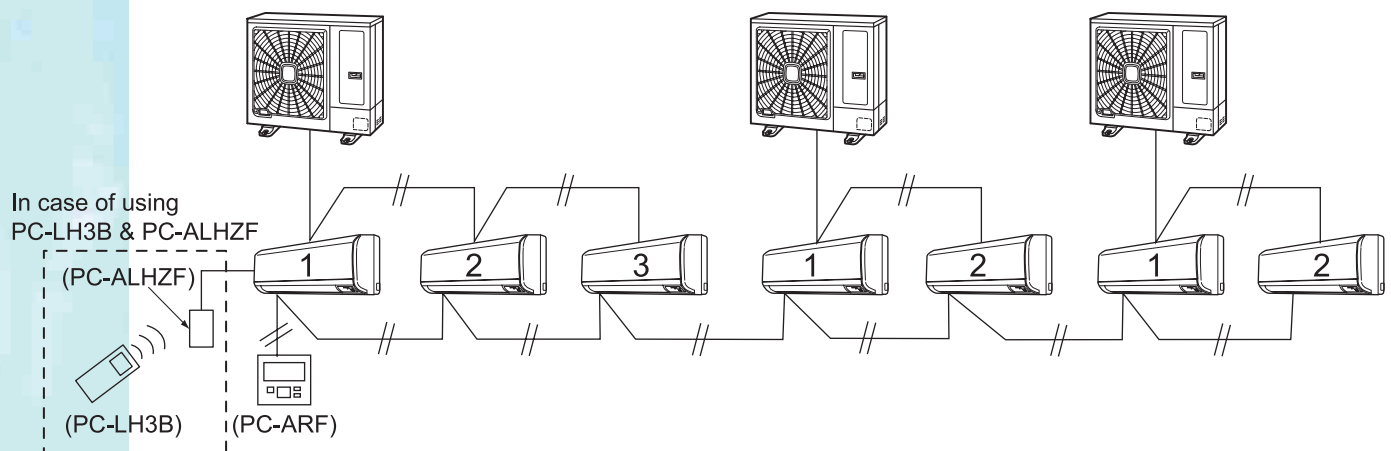


Non operation cable for remote control (simultaneous operation)

In the systems with several indoor units combinations and simultaneous operation setting, can be controlled using a single wire remote control switch (PC-ARF) or Wireless remote control (PC-LH3B) without having to join them with an operating cable for the remote control.



Also a single wire remote control switch (PC-ARF) or Wireless remote control (PC-LH3B) can be used for control different system groups. In that case all the indoor units are required to be connected with the transition wirings and the operation setting to be changed to individual operation (Not available with Utopia ES series).



i NOTE

RPK-FSN(H)3M indoor unit is adopted four (4) steps of fan speed (HIGH H, HIGH, MED and LOW). When it is installed with three (3) steps of fan speed type, connect the remote control switch to four (4) steps of fan speed type. If not, "HIGH H" will not be indicated and can not be selected. HITACHI recommends PC-ARF or PC-LH3B with PC-ALHZF remote control switch in order to obtain the maximum performance.

Attention for Connecting to Centralized Controller The followings support the fan speed "HIGH H".

* Centralized Station (EZ) PSC-A64GT

Other centralized controllers do not support the fan speed "HIGH H". These indicate the fan speed "HIGH" even if "HIGH H" is set and operated.

2.4.10 Complementary systems

◆ **KPI energy / heat recovery unit**

◆ **Operation flexibility with heat and/or humidity exchangers**

The KPI units are available in a wide range of models, with air flow rates from 250 to 2000 m³/h. They provide the appropriate air flow rate in any type of installation in line with demand.

- Units with an air flow rate of 250 m³/h: exchange sensible and latent heat using a cellulose exchanger.
- Units with an air flow rate of 500 to 2000 m³/h: can exchange latent and sensible heat or just sensible heat, depending on the exchanger installed (cellulose or aluminium).



2



NOTE

- The sensible heat exchange effect is that the hottest air stream temperature is reduced, while the coldest one is increased.
- The latent heat exchange effect is the transmission of vapor (humidity) from the wettest air stream to the other.

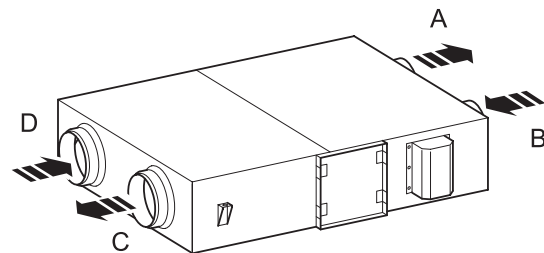
KPI units are fitted with a highly efficient exchanger to supply fresh air to indoor areas.

A: exhaust air (EA).

B: fresh outdoor air (OA).

C: supply air (SA).

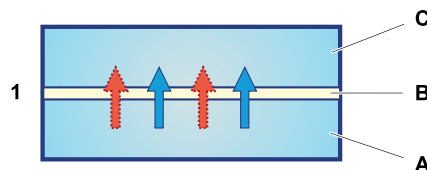
D: return air (RA).



Depending on the type of installation, it is possible to switch from the heat recovery unit to an energy recovery unit merely by replacing the exchanger.

Energy recovery exchanger (KPI energy recovery units and KPI active units)

Sensible and latent heat transfer from outdoor air to extracted air in the summer and vice versa in the winter



1: winter operating.

2: summer operating.

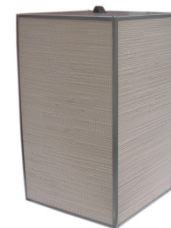
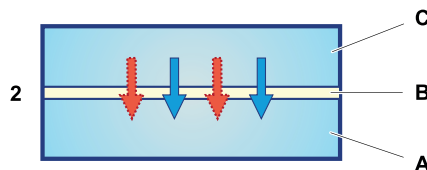
A: exhaust air.

B: heat exchanger.

C: supply air.

D: humidity transfer.

E: heat transfer.



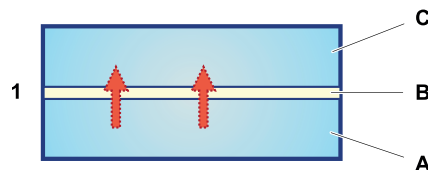
The responsible part of the exchange between both streams is the heat exchanger. The heat exchanger is a cross-flow sheet made of ultra-thin celluloid material (Energy Recovery) or of aluminium (Heat Recovery) that allows an energy exchange (temperature and humidity in case of Energy Recovery; only temperature in case of Heat Recovery) by crossing both streams. The air streams are never mixed.

Example of operation in cooling mode

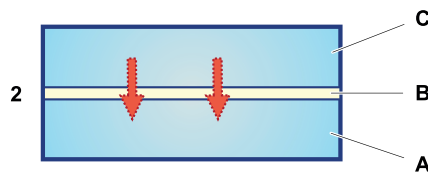
<p>A: outdoor air.</p> <ul style="list-style-type: none"> • Temperature: 32 °C. • Relative humidity: 70%. • Absolute humidity: 0.0465 kg_w/kg_a. • Enthalpy: 86.2 kJ/kg. 	<p>B: exhaust air.</p>	
<p>C: return air.</p> <ul style="list-style-type: none"> • Temperature: 26 °C. • Relative humidity: 50%. • Absolute humidity: 0.0105 kg_w/kg_a. • Enthalpy: 52.9 kJ/kg. 	<p>D: supply air.</p> <ul style="list-style-type: none"> • Temperature: 27.5 °C. • Relative humidity: 63%. • Absolute humidity: 0.0145 kg_w/kg_a. • Enthalpy: 64.7 kJ/kg. 	
<p>kg_w: kg of steam kg_a: kg of dry air</p>		

Heat recovery exchanger (KPI heat recovery units)

Sensible heat transfer from outdoor air to extracted air in the summer and vice versa in the winter.



- 1: winter operating.
- 2: summer operating.
- A: exhaust air.
- B: heat exchanger.
- C: supply air.
- E: heat transfer.



Active KPI discharge temperature control

The Active KPI is able to adapt the supply air temperature to desired discharge temperature.

Even though the KPI improves the air supply conditions, supply temperature will always be a combination of indoor and outdoor air temperatures. Active KPI supplies this additional temperature gap, making possible the control of the discharge air temperature.

Harmonized fans with new EuP Lot11 regulation

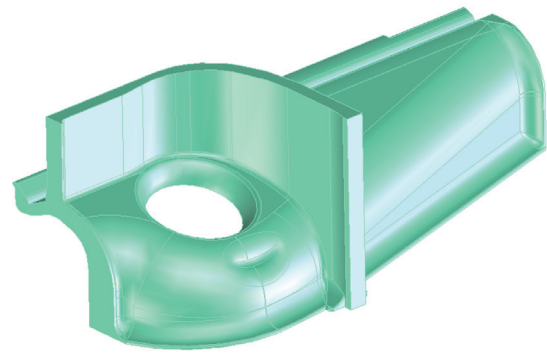
New European product regulations regarding energy efficiency are divided in lots. Lot 11 scope is the fans driven by motors with an electric power input between 125 W and 500 kW, and electric motors.

Lot 11 fixes different efficiency levels for each fan type and measuring method. The application is done in two tiers: 1st tier by January 2013 and 2nd tier by January 1st 2015. New KPI and KPI Active series fans already complies with Lot 11 2nd tier (2015) efficiency requirements, what means that in addition to advance the unit to future regulation requirements, their power input has been reduced to minimum values.

Noise reduction

The effect of a completely new internal structure design to reduce the air flow resistance and so the flow noise through the unit, combined with the application of highly efficient EC fan motors, make possible a reduction of the noise sensed below the unit and at the air discharge section.

The new internal structure, done by Expanded PolyStyrene (EPS), in addition with the reduction of the unit weight, makes possible an aerodynamic design reducing the air flow resistance, and consequently the air flow noise inside the unit, which is emitted around it and around the discharge air section.



2

EC fans: Reduced fan power input

KPI and KPI Active series are equipped with high efficient EC fan motors. Main benefit of using this kind of motors is a direct power consumption reduction, meaning a reduction of the specific fan power input of the unit, one of the main aspects considered in new European regulation for ventilation installations.

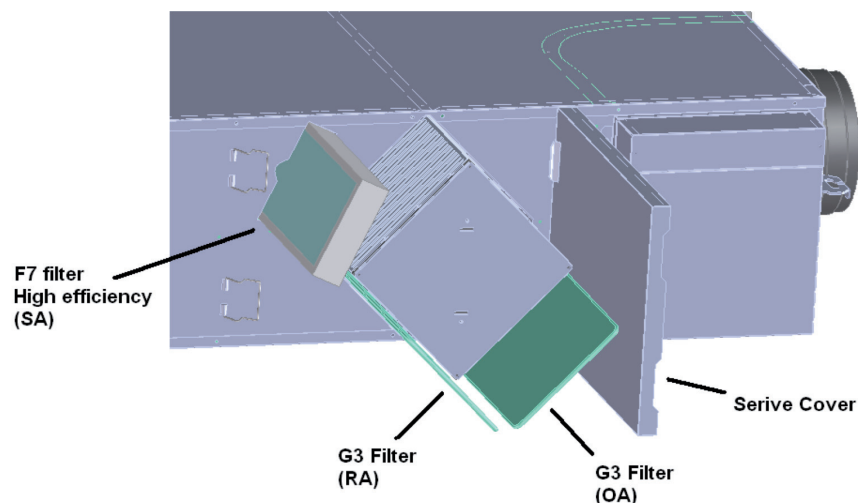
Considering as an example the comparison between new KPI-1002E3E model and its equivalent current model, both of them at the same working point (1000 m³/h --140 Pa) the input saving is higher than the 50%.

	Input power
KPI-1002E2E	580
KPI-1002E3E	285

High-efficiency filter accessory

When analysing indoor air quality control and air renovations by the supply of outdoor air, the filtering of the fresh air is a key point to consider when the installation is being designed. Besides, depending room final application (office, theatre, hospital...) a minimum filtering level must be guaranteed to cover the building regulations.

New KPI and Active KPI series are factory supplied with two G3 air filters, one for inlet air and other for outlet air. Moreover, as accessory, a high efficiency air filter classified as F7 is available. This filter is placed easily into the unit by the main service cover, being the last treatment section (after the heat exchanger and the fan motor) of the inlet air stream.



NOTE

- G3: Gravimetric efficiency up to 90%
- F7: Dust-Spot efficiency up to 90%
- Filter classification based on EN779

Insulations classified as M1

Some countries (i.e. France) consider the air conditioning ducted installations as "building components", forcing the elements that compose it, including the unit itself, to follow the same quality requirements. In these requirements are included the fire resistance, avoiding the unit promote the fire spread between rooms.

For this reason, all the internal and external insulations used in new KPI and KPI Active series are certified as M1 (UNE-23327 Spain / NF P 92-501 France), fulfilling the ducted installation materials requirements.

Automatic ventilation by CO₂ sensor

The concentration of CO₂ in a room is one of the main aspects considered for indoor air quality classification. This fact has been considered into several regulations, which classify the indoor air quality and fix the air renovations based on CO₂ concentration.

This concept is fully integrated in the new KPI and KPI Active series, offering to the user two options to control the fan performance following CO₂ concentration levels.

Automatic fan speed:

For CO₂ sensors with a proportional output (0~10V and 4~20mA output signals are accepted). The fan speed is automatically adjusted by the sensor output, ensuring always a high indoor air quality without any action by the user.

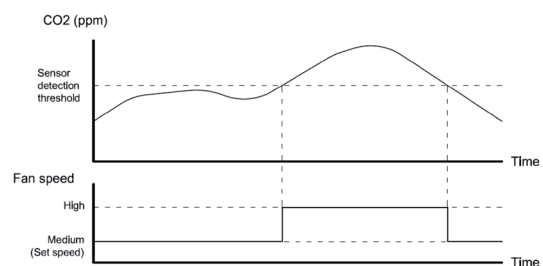
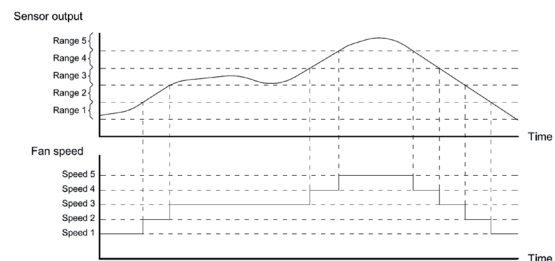


NOTE

Power supply for sensors (24V_{DC}) is available from KPI PCB, with a maximum total power output for both sensors of 6 W.

High concentration control:

For on/off CO₂ sensors. KPI unit will work at set fan speed, but when the CO₂ concentration overpasses the detection threshold of the sensor, the KPI will start working at its maximum fan speed, helping to reduce the CO₂ levels. Once the sensor signal is turned off the set fan speed is recovered.



Suitable fan pressure setting

New KPI and KPI Active series have been designed to be suitable in any installation. This concept covers several types of installations, including the ones where the KPI is supplying more than one area, what makes possible the KPI to be installed either in short duct installations or in large duct installations, and yet the KPI must cover the installation air renovations requirements.

New KPI and KPI Active range have been designed offering an easy and fast setting of the fan pressure level through its PCB, making possible the selection based on installation real requirements. This can be translated as a guarantee that the ventilation flow rate is achieved at the same time that no additional air flow is used, what means lower noise levels emitted through the duct and a lower power consumption.

Electric-heater installation

Energy recovery series and Active KPI series' heat exchanger element is made by a special celluloid material, similar to paper. In case the unit works with very low outdoor air temperatures, the heat exchanger element could be damaged decreasing significantly its exchange efficiency. For this reason the installation of an additional electrical heater (field supplied) in the OA section before the unit is recommended in installations where outdoor air temperatures below -5°C are possible. Furthermore, the installation of this electric heater in OA section could be also recommended where higher discharge air temperatures are required.

Electric heater power supply doesn't have to be done from the KPI Active electrical box, and its installation and protections must follow electrical heater manufacturer recommendations. Besides, a control signal is available from the KPI electrical box to control the switching on and off of this electric heater. By the sensing of the outdoor air, the control signal will be turned on when outdoor air temperature becomes below -5°C, and will be automatically turned off when outdoor air temperature exceeds -5°C, avoiding the installation of additional sensing devices into the electric heater element. Moreover, once the KPI is set for the electric heater application through the remote controller, the stoppage of the unit will be automatically delayed for three minutes once the remote controller is switched off. During this time the unit will work at its minimum fan speed, cooling down the electrical heater element avoiding the ducts damage by the remainder heat.

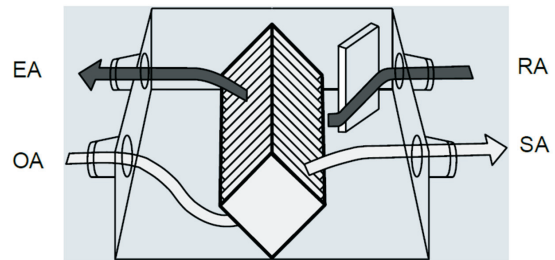
Three different ventilation modes

New KPI and KPI active series have been designed to offer to the user the maximum comfort at the same time the indoor air quality is improved by the renovation of the indoor air. Three different ventilation modes are available, so that the user can choose the ventilation mode of the system.

Forced energy recovery:

The exchange between inlet and outlet air streams is always performed, without any incidence of the outdoor air condition. By this ventilation mode the inlet air will always be an average of the indoors and outdoors conditions.

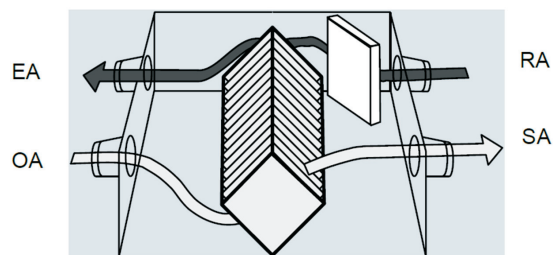
- SA: supply air.
- EA. exhaust air.
- RA: return air.
- OA: outdoor air.



Forced free ventilation:

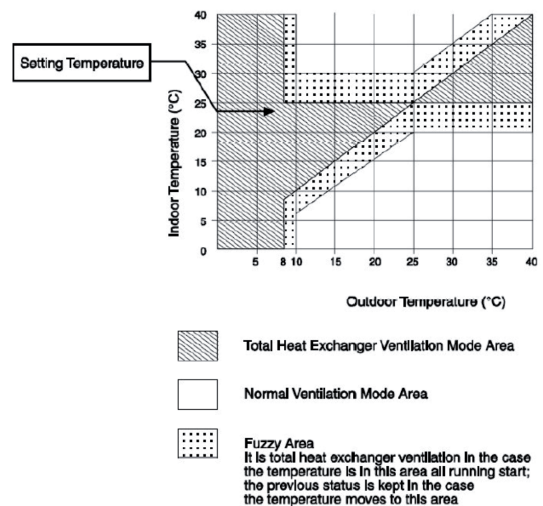
The damper is fixed open, what means the heat exchanger element is bypassed and no exchange is performed between inlet and outlet air streams. The air from outdoors is directly supplied to indoors.

- SA: supply air.
- EA. exhaust air.
- RA: return air.
- OA: outdoor air.



Automatic ventilation (factory setting):

An advanced temperature control is performed deciding automatically if the damper must be closed or open, based on indoor and outdoor temperatures and the setting temperature of the remote controller. The target is to achieve the maximum efficiency during the ventilation.



Un-balancing of the ventilation for room pressurization

KPI unit works with two air streams: fresh air coming from outdoors and, on the hand, the indoor air to be renewed. As default setting the unit will supply the same quantity of air that it extracts, so the areas (if there is more than one) under the effect of the KPI will be balanced.



Depending the activities of the areas could be interesting to cause an over-pressure/depression in one of them,,i.e. to avoid the smoke and smells to be transferred from one area to another. KPI offers the possibility to un-balance the two air-streams by the setting of the remote controller:

Remote control speed	Normal operation		Supply fan set		Exhaust fan set	
	Outdoor air fan (supply air)	Return air fan (exhaust air)	Outdoor air fan (supply air)	Return air fan (exhaust air)	Outdoor air fan (supply air)	Return air fan (exhaust air)
High	High	High	High	High	High	High
Medium	Medium	Medium	High	Medium	Medium	High
Low	Low	Low	Medium	Low	Low	Medium

Prevent smoke and contamination to enter into the room and compensate the effect of auxiliary extraction devices

Helps to evacuate smoke and contamination from the room

Fan stoppage delay function

Even though the ventilation system works for the whole day, while the installation is full of people doing any activity the indoor air won't be as fresh as it would be in case the facility is empty. This means that at the end of the day some pollution could remain in the air. If the ventilation system is stopped at the end of the activity, the remaining pollution wouldn't be extracted and the indoor air won't be completely fresh at the starting of the next day.


KPI series offer to the user the option to delay the stoppage of the unit, keeping the unit switched on when the conditioning/ventilation system is switched off during a specific time. In case of KPI active, during this time the unit will work as an energy recovery ventilation unit (outdoor unit compressor off, without any cooling/heating load to save energy).

The result will be a completely fresh air of high quality at the starting of the next activity.

Sound attenuator accessory

For installations where a reduction of the sound level is required, it is offered a sound attenuator to be connected directly on the unit duct adapter. An average reduction of 5 dB(A) is obtained in the discharge section (sound attenuation level in the field may vary depending on real installation specifications).

KPI unit	Sound attenuator model	Code
KPI-502(E/H/X)3E	SLT-30-200-L600	70550200
KPI-802(E/H/X)3E	SLT-30-250-L600	70550201
KPI-1002(E/H/X)3E	SLT-30-300-L600	70550202
KPI-1502(E/H)3E	SLT-30-355-L600	70550203
KPI-2002(E/H)3E		




NOTE

Sound attenuator accessory is not available for KPI-252E3E model.

◆ Active KPI

Combinability

Active KPI units have been prepared for the combination with both Utopia and Set Free systems.

	Cooling ⁽¹⁾	Heating ⁽²⁾	Equivalent HP Capacity	COMBINABILITY	
				Utopia ⁽³⁾	Set Free ⁽⁴⁾
KPI-502X3E	5.3 (1.8)	6.9 (2.1)	1,5 HP	–	√
KPI-802X3E	8.0 (2.9)	9.8 (3.5)	2,0 HP	RAS-2HVRN2	√
KPI-1002X3E	10.8 (3.7)	12.9 (4.4)	2,5 HP	RAS-2,5HVRN2	√



NOTE

⁽¹⁾ Cooling capacity is based on the following conditions: OA= 35 °C DB / 24 °C WB; IA= 27 °C DB / 19 °C WB with the unit working at its nominal air flow (high speed).

Figure between brackets represents the capacity contribution of the heat exchanger element

⁽²⁾ Heating capacity is based on the following conditions: OA= 7 °C DB / 6 °C WB; IA= 20 °C DB / 14 °C WB with the unit working at its nominal air flow (high speed).

Figure between brackets represents the capacity contribution of the heat exchanger element

⁽³⁾ Only the single combination is allowed with 2/2.5HP Series.

In case of connecting the KPI-802X3E and KPI-1002X3E with 2/2.5HP outdoor units the capacity would be reduced as follows:

	CAPACITIES (kW)	
	Cooling	Heating
KPI-802X3E	7,4 (2,9)	9,1 (3,5)
KPI-1002X3E	9,7 (3,7)	11,4 (4,4)

⁽⁴⁾ Installation with next Set Free series is allowed: FS(V)N(Y)2E, FSXN, FSNM, FSN2.

For installations into SF systems, standard indications and selection methods used for SF outdoor units must be followed considering the Active KPI as a standard indoor unit of the equivalent HP capacity. The total capacity of installed Active KPIs can never exceed the 30% of the total system capacity.

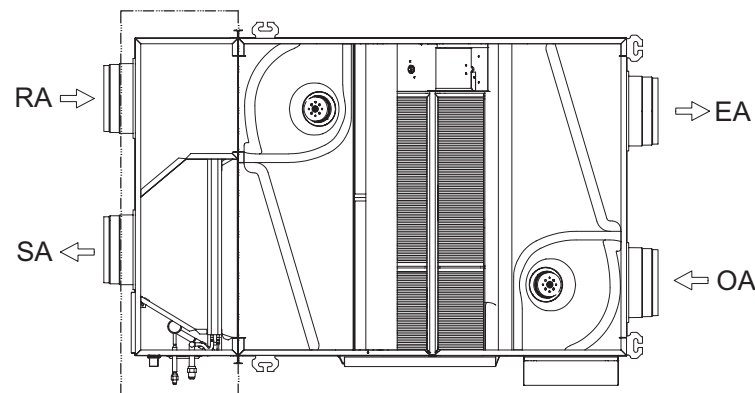
For further information about SF selection method, please refer to Set Free Technical Catalogue.

⁽⁵⁾ Actual system performance may vary depending on the specific installation conditions.

Control Specification

Active KPI capacity demand control

Active KPI demand control is based on the control of the discharge air temperature. Set temperature on the remote controller or equivalent centralized controller will be understood by the control as the desired discharge temperature



The capacity demand is adjusted by the continuous sensing of Tx and Tout temperatures. In case Tx becomes close to set temperature, the control could decide to stop the heat pump, saving energy and achieving the heat demand just by the effect of the heat exchanger element. Must be considered that return air (RA) is not supplied again to the room. It is extracted from indoors and replaced by fresh air (from OA to SA), changing typical considerations of conditioning indoor units.

It could be possible that due to refrigerant cycle limitations, Tx temperature, setting temperature and the whole system working conditions, Tout cannot be adjusted to match the setting temperature. In this case, by the continuous sensing of Tout, the unit will cycle on/off in order to match as much as possible the setting temperature. During this on/off cycling the ventilation is never stopped in order to guarantee the air renovations.

◆ DX-Interface series 1

Inverter control for non-Hitachi Indoor Units by Inlet air, outlet air and duty signal

Once the expansion valve kit has been installed, the connected unit is controlled based on Hitachi inverter high performance control.

DX-Interface Series 1 has been designed offering to the user up to three different operation modes depending the capacity control to be performed (inlet temperature, outlet temperature or duty control).

New DX-Interface series 1 will be fully compatible with CSNET WEB 3.2 version. The installation is also possible with previous versions, but with some functional limitations.

Compatible with Set Free and Utopia systems

DX-Interface series 1 can be either connected to Utopia systems for single connections or to Set Free systems in case of multiple installations. Thanks to Hitachi system Free technology, the same DX-Interface series 1 model is connectable to both systems, making easier the installation design.

DX-Interface serie 1 - Optional Functions

Specific functions have been implemented in the new DX-Interface series 1, making it suitable for different installation requirements.

In addition, the DX-Interface series 1 and Hitachi outdoor units offer different input/output signals allowing the installer to embed it in any air conditioning / ventilation system.

Capacity control modes

The capacity control mode means the kind of control the DX-Interface series 1 performs in order to adapt the system performance to the cooling and heating load required by the user.

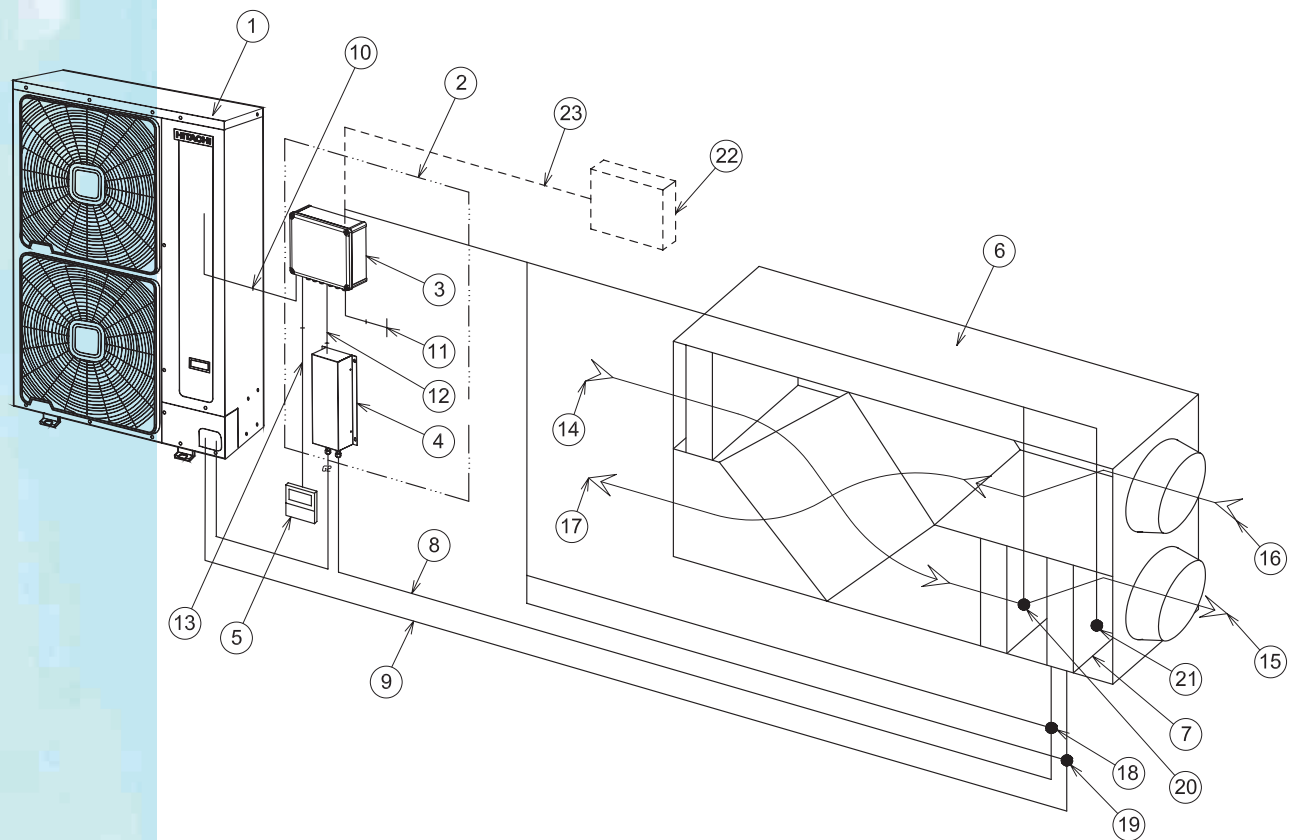
New Hitachi DX-Interface series 1 allows performing this capacity control by three different control modes:

- **Outlet temperature:** It makes the discharge temperature (temperature at the outlet of the dx-coil) same than the setting temperature. This kind of control is focused in controlling the discharge temperature of the system [Application example: Air Handling Units].
- **Inlet temperature:** The control is done based on the inlet temperature to the dx-coil. This kind of control is suitable for close installations where the inlet temperature to the dx-coil comes from the same room to be conditioned, looking for the whole room conditioning [Application example: Indoor Units].
- **Duty signal:** The capacity demand is not based in any specific temperature input to the DX-Interface series 1, but in an input voltage or current signal (0~10 V, 0~5 V or 4~20 mA). The duty signal, generated externally and supplied to the DX-Interface series 1, must be inherent to the real condition and target of the space to be conditioned [Application example: Air Handling Units, Air Curtains].



NOTE

- *The installation distance between the Dx-Interface series 1 and the device with heat exchanger must be as short as possible.*
- *The pipe length between the unit or device with heat exchanger and the expansion valve box must be less than 5 m. On the other hand, the height difference must be no more than 2 m.*
- *Make sure that the installation distance between the control box and the unit or device with heat exchanger is short enough that the thermistor sensing has no distortion.*
- *The installation distance between the control box and the expansion valve box must be less than 5 m to ensure the correct expansion valve control.*



2

Item	Description	Item	Description
1	Hitachi outdoor unit	13	Remote controller communication
2	DX-Interface EXV-(2.0-10.0)E1	14	Outdoor air (AHU applications)
3	Control box	15	Supply air (AHU applications)
4	Expansion valve box	16	Return air (AHU applications)
5	Remote controller (Optional)	17	Exhaust air (AHU applications)
6	Unit or device with heat exchanger	18	Liquid pipe thermistor (THM3, PCB1)
7	DX-heat exchanger	19	Gas pipe thermistor (THM5, PCB1)
8	Liquid line	20	Inlet DX-coil thermistor (THM1, PCB1)
9	Gas line	21	Outlet DX-coil thermistor (THM2, PCB1)
10	Outdoor - Indoor communication	22	Field supplied controller (Optional)
11	Power supply	23	Duty signal (0~10V, 0~5V, 4~20 mA) (Optional)
12	Expansion valve control communication		

CAUTION

- The installation distance between the DX-interface and the device with heat exchanger must be the shortest possible.
- Keep the distance between the unit or device with heat exchanger and the expansion valve box for the piping length up to 5 m. Also the elevation difference between the unit or device with heat exchanger and the expansion valve box must be no more than 2 m.
- Make sure that the installation distance between the control box and the unit or device with heat exchanger is short enough that the thermistors sensing are not distorted.
- The thermistor cable should never be installed in the same ducting as power or control cables.

Combinability

Outdoor unit	Control mode		
	Air inlet ⁽¹⁾	Air outlet	Duty
Utopia: IVX/ES, IVX Premium, IVX Standard and RASC series	●	● ⁽²⁾	● ⁽²⁾
Set Free: FS(V)N(Y)2E, FSXN, FSN2 and FSNM series ⁽⁴⁾⁽⁵⁾	●	● ⁽³⁾	● ⁽³⁾



NOTE

- ⁽¹⁾ In case of AHU applications, is it considered as Inlet Air the point just before the DX-Coil.
- ⁽²⁾ Only single combination is allowed.
- ⁽³⁾ Limited control depending on whole system working condition
- ⁽⁴⁾ In case of installing DX-Kits and Hitachi indoor units to a common Outdoor Unit, total DX-Kit capacity can not exceed the 30% of total system capacity.
- ⁽⁵⁾ If only Dx-Kits are connected to the outdoor unit, total DX-Kit capacity can not exceed the 100% of outdoor unit capacity.
- DX-Interface EXV-(2.0-10.0)E1 models are only combinable with air to air systems.

2.5 Maintenance benefits

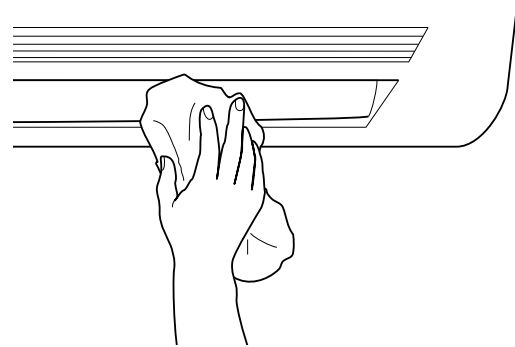
2.5.1 Indoor units

◆ RCI, RCIM

Easy cleaning

The even distribution of air is guaranteed thanks to the design of the wide supply louvers that also prevent dirt from accumulating on the surface of the ceiling, avoiding unpleasant stains on the air outlets.

The flat surface of the louvers is stain-resistant and very easy to clean.



Simple maintenance

You do not have to remove the entire air inlet panel to check the drainage system or carry out an emergency drain. Simply open the air inlet grille.

Mould protection

The condensate drain pan has mould protection, which is applied during the manufacturing process.



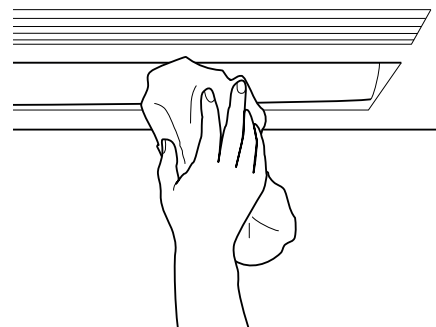
NOTE

The mould protection lasts for approximately one to two years. An additional mould protection product must be applied after this time.

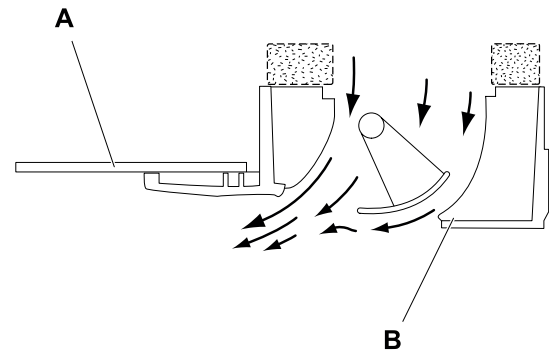
◆ RCD

Easy cleaning and maintenance

The flat surface of the air panel louvers (optional) is stain-resistant and very easy to clean.



The air inlet panel grille is designed to prevent the entry of dust or dirt. Furthermore, the air outlet flow is designed to prevent dirt from accumulating on the ceiling -A- and on the air outlet panel -B-.



Air quality improvement filters

Optional filters can be installed to improve the air quality:

- Long-lasting anti-bacteria filters.
- Deodorising filters.

These filters are especially recommended in places where the presence of bacteria must particularly be controlled, such as in hospitals, clinics, etc.

The optional anti-bacteria filter can control the most common types of bacteria and prevent them from spreading thanks to its organic and inorganic agents.

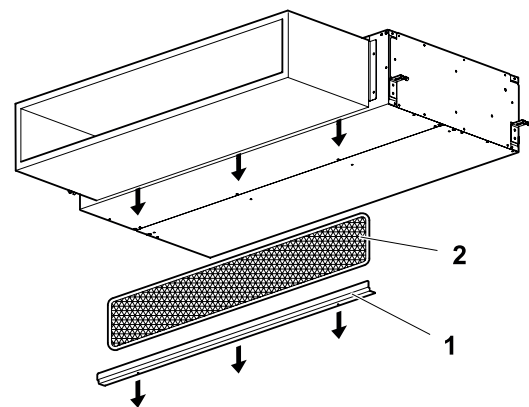
The optional deodorising filter can effectively eliminate tobacco or body odours thanks to a special chemical fibre. This filter is reusable. When the deodorising effect decreases, simply expose it to Sun.svglight for one day for it to recover its efficiency.

◆ RPI, RPIM

Filter maintenance

The location of the air filter has been studied so that the air ducts do not have to be removed or additional access hatches provided.

Simply remove the set screws from the bar -1- (RPIM units: 2 screws, RPI units: 3 screws) and remove it to pull the filter downwards.

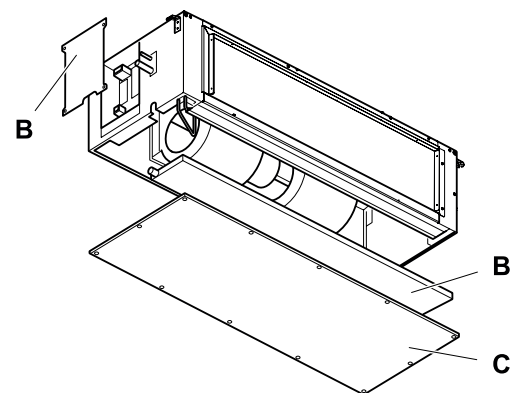


Maintenance of unit RPI-(8.0/10.0)FSN3E

One of the aspects considered in the design of the unit is its easy access for maintenance operations. The main aim is to be able to carry out normal operations on the main components without having to uninstall the unit.

The main access is provided from the base of unit -C-, which can be easily separated without the need for any more space. From here, the following unit parts can be reached: fan motor, evaporator, drain pan -B- and the entire refrigerant circuit, all of which are secured to the main unit structure.

There is a cover -A- for electrical maintenance that is located on one side of the unit, which can be separated without affecting its connection.



2.5.2 Availability of maintenance tools

◆ HITACHI Service Tools

All of the functions of the HITACHI Service Tools software can also be used for unit maintenance (preventive or corrective). Any incident can be quickly detected and solved in a shorter time.

The CSNET-WEB system is also a powerful tool that is extremely useful for maintenance work.

HITACHI has a range of different remote control systems that can be used with the SET-FREE and UTOPIA outdoor units. Consult the corresponding Technical Catalogue for controls.



2

◆ Monitoring the system and simplifying maintenance work

The HITACHI Service Tools software is a very powerful tool for the control and management of air conditioning installations. To do so, it supervises the working order of the entire system and displays data that allows for potential incidents to be detected.

Management via software improves the advanced scheduling of planned technical stoppages and means that any unit can be inspected without altering the operation of the air conditioning system. The data obtained is processed and interpreted directly by the software, without the need to waste time or personnel on data reading or on-site checks.

◆ Decrease in operation costs

Monitored operation allows for real-time observation of the performance of the entire air conditioning system. The control system is responsible for ensuring all parts work according to the foreseen conditions, with the maximum performance and efficiency at all times. In this situation, the utmost benefit is obtained from the entire installation at minimum operation costs.

Any range of values tending to be outside that foreseen is an indication of a situation that must be corrected as quickly as possible. The management software clearly displays situations of this type and, therefore, is an interesting ally for reducing costs generated by extraordinary maintenance stoppages.

The more in-depth analysis of the tendencies offers a starting point for realistic maintenance schedules, adapted to the operating conditions of each system.

2.5.3 Simple maintenance

◆ Optimised design to simplify maintenance

The components of the indoor units of the entire range have a strong, long-lasting design bearing in mind the demanding requirements of the market insofar as maintenance cost reduction.

The interior structure of the units and the layout of the internal parts make any removal and assembly operations easier where technical work is required for some reason.

◆ Minimum or zero maintenance

All units and components of the System Free range of indoor units have been designed for simple, easy maintenance operations.

◆ Absence of replacement consumables

Parts subject to inspection are practically inexistent throughout the range. On some specific models, only the regular long-term replacement of the air and deodorising filters is required. Consumables or replacement parts are not required.

◆ Loyal to the HITACHI philosophy

The indoor units of the System Free range have been designed in line with HITACHI philosophy to guarantee the highest reliability and reduce maintenance work to an essential minimum.

3. General data

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 3

3.1 General data

3.1.1 Indoor units

◆ Considerations

- The nominal cooling and heating capacity is the combined capacity of the outdoor and indoor units of the system and is based on Standard EN14511, with the following operating conditions.



NOTE

The cooling and heating capacity of the indoor units is different in the UTOPIA and SET-FREE systems.

Operation conditions.		Cooling	Heating
Indoor air inlet temperature	DB	27.0 °C	20.0 °C
	WB	19.0 °C	—
Outdoor air inlet temperature	DB	35.0 °C	7.0 °C
	WB	—	6.0 °C

DB: dry bulb; WB: wet bulb
 Pipe length: 7.5 m; pipe height: 0 m.

- The sound pressure level has been measured in an anechoic chamber under the following conditions:
 - RCI(M), RCD and RPI(M) indoor units: 1.5 m below the unit.
 - RPC and RPK indoor units: 1 m below the unit, 1 m from the discharge louvre.
 - RPF(I): 1 m from floor level, 1 m from the front surface of the unit.
- The tests were carried out using the following panels:

Unit	Panel
RCI	P-N23NA / P-AP160NA1 / P-AP160NAE (according to each model)
RCIM	P-N23WAM
RCD	P-N23DNA / P-N46DNA

◆ RCI - 4-way cassette
RCI-(1.0-6.0)FSN3
RCI-(1.0-2.5)FSN3

MODEL			RCI-1.0FSN3	RCI-1.5FSN3	RCI-2.0FSN3	RCI-2.5FSN3
Power supply			1~ 230V 50Hz			
Nominal cooling capacity (UTOPIA)	kW		2.8	4.0	5.0	6.3
Nominal heating capacity (UTOPIA)	kW		3.2	4.8	5.6	7.5
Nominal cooling capacity (SET-FREE)	kW		2.8	4.0	5.6	7.1
Nominal heating capacity (SET-FREE)	kW		3.2	4.8	6.3	8.5
Air flow	Speed	m ³ /min	15 / 13 / 11 / 9	21 / 17 / 14 / 11	22 / 17 / 14 / 11	27 / 23 / 18 / 14
	(HiH/Hi/Me/Lo)					
Electric fan output power		W	57	57	57	57
Sound pressure level	Speed	dB(A)	33 / 30 / 28 / 27	35 / 31 / 30 / 27	37 / 32 / 30 / 27	42 / 36 / 32 / 28
	(HiH/Hi/Me/Lo)					
Sound power level		dB(A)	52	53	54	58
Outer measurements	Height	mm	248	248	248	248
	Width	mm	840	840	840	840
	Depth	mm	840	840	840	840
Net weight		kg	20	21	21	22
Refrigerant			R410A (factory-charged corrosion-proof nitrogen)			
Refrigerant pipe connection			Flare nuts			
Refrigerant pipe size	Liquid	mm (in)	ø6.35 (1/4)	ø6.35 (1/4)	ø6.35 (1/4)	ø9.53 (3/8)
	Gas	mm (in)	ø12.7 (1/2)	ø12.7 (1/2)	ø15.88 (5/8)	ø15.88 (5/8)
Condensate drain connection		mm	ø32 ⁽¹⁾	ø32 ⁽¹⁾	ø32 ⁽¹⁾	ø32 ⁽¹⁾
Maximum electricity demand		A	5	5	5	5
Packaging measurements		m ³	0.21			
Adaptable air panel model			P-AP160NA1 (without Motion Sensor) / P-AP160NAE (with Motion Sensor)			
Colour (Munsell code)			Neutral white (4.56Y8.85/0.38)			
Outer measurements	Height	mm	37			
	Width	mm	950	950	950	950
	Depth	mm	950	950	950	950
Net weight		kg	6.5	6.5	6.5	6.5
Packaging measurements		m ³	0.10			
Remote control			PC-ARF (PC-ART)(*)			

⁽¹⁾ Outer diameter (VP25).

The data obtained is based on the operating conditions described in [Considerations](#), see on page 70.

 NOTE

(*) With PC-ART, functions for: individual louver, 4 steps fan speed and human sensor, are not available.

3

RCI-(3.0-6.0)FSN3

MODEL			RCI-3.0FSN3	RCI-4.0FSN3	RCI-5.0FSN3	RCI-6.0FSN3
Power supply			1~ 230V 50Hz			
Nominal cooling capacity (UTOPIA)	kW		7.1	10.0	12.5	14.0
Nominal heating capacity (UTOPIA)	kW		8.0	11.2	14.0	16.0
Nominal cooling capacity (SET-FREE)	kW		8.0	11.2	14.0	16.0
Nominal heating capacity (SET-FREE)	kW		9.0	12.5	16.0	18.0
Air flow	Speed	m ³ /min	27 / 23 / 18 / 14	37 / 31 / 24 / 20	37 / 33 / 26 / 21	37 / 35 / 28 / 22
	(high/medium/low)					
Electric fan output power		W	57	127	127	127
Sound pressure level	Speed	dB(A)	42 / 36 / 32 / 28	48 / 43 / 39 / 33	48 / 45 / 40 / 35	48 / 46 / 41 / 37
	(high/medium/low)					
Sound power level		dB(A)	58	65	64	68
Outer measurements	Height	mm	298	298	298	298
	Width	mm	840	840	840	840
	Depth	mm	840	840	840	840
Net weight		kg	26	26	26	26
Refrigerant			R410A (factory-charged corrosion-proof nitrogen)			
Refrigerant pipe connection			Flare nuts			
Refrigerant pipe size	Liquid	mm (in)	ø9.53 (3/8)	ø9.53 (3/8)	ø9.53 (3/8)	ø9.53 (3/8)
	Gas	mm (in)	ø15.88 (5/8)	ø15.88 (5/8)	ø15.88 (5/8)	ø15.88 (5/8)
Condensate drain connection		mm	ø32 ⁽¹⁾	ø32 ⁽¹⁾	ø32 ⁽¹⁾	ø32 ⁽¹⁾
Maximum current		A	5	5	5	5
Packaging measurements		m ³	0.25			
Adaptable air panel model			P-AP160NA1 (without Motion Sensor) / P-AP160NAE (with Motion Sensor)			
Colour (Munsell code)			Neutral white (4.56Y8.85/0.38)			
Outer measurements	Height	mm	37			
	Width	mm	950	950	950	950
	Depth	mm	950	950	950	950
Net weight		kg	6.5	6.5	6.5	6.5
Packaging measurements		m ³				
Remote control			PC-ARF (PC-ART)(*)			
⁽¹⁾ Outer diameter (VP25).						
The data obtained is based on the operating conditions described in Considerations , see on page 70.						


NOTE

(*) With PC-ART, functions for: individual louver, 4 steps fan speed and human sensor, are not available.

RCI-(1.0-6.0)FSN3Ei
RCI-(1.0-2.5)FSN3Ei

MODEL			RCI-1.0FSN3Ei	RCI-1.5FSN3Ei	RCI-2.0FSN3Ei	RCI-2.5FSN3Ei
Power supply			1~ 230V 50Hz			
Nominal cooling capacity (UTOPIA)		kW	2.5	3.6	5.0	6.0
Nominal heating capacity (UTOPIA)		kW	2.8	4.0	5.6	7.0
Nominal cooling capacity (SET-FREE)		kW	2.8	4.0	5.6	7.1
Nominal heating capacity (SET-FREE)		kW	3.2	4.8	6.3	8.5
Air flow	Speed (high/medium/low)	m ³ /min	13/12/11	15/14/12	16/14/12	20/17/15
Electric fan output power		W	56	56	56	56
Sound pressure level	Speed (high/medium/low)	dB(A)	32/30/28	32/30/28	32/30/28	32/30/28
Sound power level		dB(A)	54	54	54	54
Outer measurements	Height	mm	248	248	248	248
	Width	mm	840	840	840	840
	Depth	mm	840	840	840	840
Net weight		kg	23	23	24	24
Refrigerant			R410A (factory-charged corrosion-proof nitrogen)			
Refrigerant pipe connection			Flare nuts			
Refrigerant pipe size	Liquid	mm (in)	ø6.35 (1/4)	ø6.35 (1/4)	ø6.35 (1/4)	ø9.53 (3/8)
	Gas	mm (in)	ø12.7 (1/2)	ø12.7 (1/2)	ø15.88 (5/8)	ø15.88 (5/8)
Condensate drain connection		mm	ø32 ⁽¹⁾	ø32 ⁽¹⁾	ø32 ⁽¹⁾	ø32 ⁽¹⁾
Maximum electricity demand		A	5	5	5	5
Packaging measurements		m ³	0.22	0.22	0.22	0.22
Adaptable air panel model			P-N23NA			
Colour (Munsell code)			Neutral white (4.56Y8.85/0.38)			
Outer measurements	Height	mm	37	37	37	37
	Width	mm	950	950	950	950
	Depth	mm	950	950	950	950
Net weight		kg	6	6	6	6
Packaging measurements		m ³	0.08	0.08	0.08	0.08
Remote control			PC-ART (PC-ARF)			
⁽¹⁾ Outer diameter.						
The data obtained is based on the operating conditions described in Considerations , see on page 70.						

RCI-(3.0-6.0)FSN3Ei

MODEL			RCI-3.0FSN3Ei	RCI-4.0FSN3Ei	RCI-5.0FSN3Ei	RCI-6.0FSN3Ei
Power supply			1~ 230V 50Hz			
Nominal cooling capacity (UTOPIA)		kW	7.1	10.0	12.5	14.0
Nominal heating capacity (UTOPIA)		kW	8.0	11.2	14.0	16.0
Nominal cooling capacity (SET-FREE)		kW	8.0	11.2	14.0	16.0
Nominal heating capacity (SET-FREE)		kW	9.0	12.5	16.0	18.0
Air flow	Speed (high/medium/low)	m ³ /min	26/23/20	32/28/24	34/29/25	37/32/27
Electric fan output power		W	56	108	108	108
Sound pressure level	Speed (high/medium/low)	dB(A)	34/32/30	38/35/33	39/37/35	42/40/36
Sound power level		dB(A)	56	60	61	64
Outer measurements	Height	mm	298	298	298	298
	Width	mm	840	840	840	840
	Depth	mm	840	840	840	840
Net weight		kg	26	29	29	29
Refrigerant			R410A (factory-charged corrosion-proof nitrogen)			
Refrigerant pipe connection			Flare nuts			
Refrigerant pipe size	Liquid	mm (in)	ø9.53 (3/8)	ø9.53 (3/8)	ø9.53 (3/8)	ø9.53 (3/8)
	Gas	mm (in)	ø15.88 (5/8)	ø15.88 (5/8)	ø15.88 (5/8)	ø15.88 (5/8)
Condensate drain connection		mm	ø32 ⁽¹⁾	ø32 ⁽¹⁾	ø32 ⁽¹⁾	ø32 ⁽¹⁾
Maximum electricity demand		A	5	5	5	5
Packaging measurements		m ³	0.26	0.26	0.26	0.26
Adaptable air panel model			P-N23NA			
Colour (Munsell code)			Neutral white (4.56Y8.85/0.38)			
Outer measurements	Height	mm	37	37	37	37
	Width	mm	950	950	950	950
	Depth	mm	950	950	950	950
Net weight		kg	6	6	6	6
Packaging measurements		m ³	0.08	0.08	0.08	0.08
Remote control			PC-ART (PC-ARF)			
⁽¹⁾ Outer diameter.						
The data obtained is based on the operating conditions described in <i>Considerations</i> , see on page 70.						

◆ RCIM - 4-way cassette (compact)
RCIM-(0.8-2.0)FSN2

MODEL			RCIM-0.8FSN2	RCIM-1.0FSN2	RCIM-1.5FSN2	RCIM-2.0FSN2
Power supply			1~ 220-240V 50Hz			
Nominal cooling capacity (UTOPIA)	kW		2	2.5	3.6	5.0
Nominal heating capacity (UTOPIA)	kW		2.2	2.8	4.0	5.6
Nominal cooling capacity (SET FREE)	kW		2.2	2.8	4.0	5.6
Nominal heating capacity (SET FREE)	kW		2.5	3.2	4.8	6.3
Air flow	Speed (high/medium/low)	m ³ /min	13/12/10	13/12/10	15/13.5/12	16/14/12
Electric fan output power		W	52	52	52	52
Sound pressure level	Speed (high/medium/low)	dB(A)	36/34/28	36/34/28	38/35/33	42/39/37
Sound power level		dB(A)	56	56	58	62
Outer measurements	Height	mm	295	295	295	295
	Width	mm	570	570	570	570
	Depth	mm	570	570	570	570
Net weight		kg	17	17	17	17
Refrigerant			R410A (factory-charged corrosion-proof nitrogen)			
Refrigerant pipe connection			Flare nuts			
Refrigerant pipe size	Liquid	mm (in)	ø6.35 (1/4)	ø6.35 (1/4)	ø6.35 (1/4)	ø6.35 (1/4)
	Gas	mm (in)	ø12.7 (1/2)	ø12.7 (1/2)	ø12.7 (1/2)	ø15.88 (5/8)
Condensate drain connection		mm	ø32 ⁽¹⁾	ø32 ⁽¹⁾	ø32 ⁽¹⁾	ø32 ⁽¹⁾
Maximum electricity demand		A	5	5	5	5
Packaging measurements		m ³	0.13	0.13	0.13	0.13
Adaptable air panel model			P-N23WAM			
Colour (Munsell code)			Gypsum white (4.1Y8.5/0.7)			
Outer measurements	Height	mm	35	35	35	35
	Width	mm	700	700	700	700
	Depth	mm	700	700	700	700
Net weight		kg	3.5	3.5	3.5	3.5
Packaging measurements		m ³	0.07	0.07	0.07	0.07
Remote control			PC-ART (PC-ARF)			

⁽¹⁾ Outer diameter.

The data obtained is based on the operating conditions described in *Considerations*, see on page 70.

3

◆ RCD - 2-way cassette
RCD-(1.0-2.5)FSN2

MODEL			RCD-1.0FSN2	RCD-1.5FSN2	RCD-2.0FSN2	RCD-2.5FSN2
Power supply			1~ 220-240V 50Hz			
Nominal cooling capacity (UTOPIA)	kW		2.5	3.6	5.0	6.0
Nominal heating capacity (UTOPIA)	kW		2.8	4.0	5.6	7.0
Nominal cooling capacity (SET FREE)	kW		2.8	4.0	5.6	7.1
Nominal heating capacity (SET FREE)	kW		3.2	4.8	6.3	8.5
Air flow	Speed (high/medium/low)	m ³ /min	10/9/8	13/11/9	15/13/11	19/16/14
Electric fan output power		W	35	35	35	55
Sound pressure level	Speed (high/medium/low)	dB(A)	34/32/30	35/32/30	35/32/30	38/34/31
Sound power level		dB(A)	55	56	56	59
Outer measurements	Height	mm	298	298	298	298
	Width	mm	860	860	860	860
	Depth	mm	620	620	620	620
Net weight		kg	27	27	27	30
Refrigerant			R410A (factory-charged corrosion-proof nitrogen)			
Refrigerant pipe connection			Flare nuts			
Refrigerant pipe size	Liquid	mm (in)	ø6.35 (1/4)	ø6.35 (1/4)	ø6.35 (1/4)	ø9.53 (3/8)
	Gas	mm (in)	ø12.7 (1/2)	ø12.7 (1/2)	ø15.88 (5/8)	ø15.88 (5/8)
Condensate drain connection		mm	ø32 ⁽¹⁾	ø32 ⁽¹⁾	ø32 ⁽¹⁾	ø32 ⁽¹⁾
Maximum electricity demand		A	5	5	5	5
Packaging measurements		m ³	0.23	0.23	0.23	0.23
Adaptable air panel model			P-N23DNA			
Colour (Munsell code)			Neutral white (4.56Y8.85/0.38)			
Outer measurements	Height	mm	30+10	30+10	30+10	30+10
	Width	mm	1100	1100	1100	1100
	Depth	mm	710	710	710	710
Net weight		kg	6	6	6	6
Packaging measurements		m ³	0.10	0.10	0.10	0.10
Remote control			PC-ART (PC-ARF)			

⁽¹⁾ Outer diameter.

 The data obtained is based on the operating conditions described in [Considerations](#), see on page 70.

RCD-(3.0-5.0)FSN2

MODEL			RCD-3.0FSN2	RCD-4.0FSN2	RCD-5.0FSN2
Power supply			1~ 220-240V 50Hz		
Nominal cooling capacity (UTOPIA)	kW		7.1	10.0	12.5
Nominal heating capacity (UTOPIA)	kW		8.0	11.2	14.0
Nominal cooling capacity (SET-FREE)	kW		8.0	11.2	14.0
Nominal heating capacity (SET-FREE)	kW		9.0	12.5	16.0
Air flow	Speed (high/medium/low)	m ³ /min	19/16/14	29/24/21	34/29/25
Electric fan output power		W	55	35 x 2	55 x 2
Sound pressure level	Speed (high/medium/low)	dB(A)	38/34/31	40/36/33	43/40/36
Sound power level		dB(A)	59	60	62
Outer measurements	Height	mm	298	298	298
	Width	mm	860	1420	1420
	Depth	mm	620	620	620
Net weight		kg	30	48	48
Refrigerant			R410A (factory-charged corrosion-proof nitrogen)		
Refrigerant pipe connection			Flare nuts		
Refrigerant pipe size	Liquid	mm (in)	ø9.53 (3/8)	ø9.53 (3/8)	ø9.53 (3/8)
	Gas	mm (in)	ø15.88 (5/8)	ø15.88 (5/8)	ø15.88 (5/8)
Condensate drain connection		mm	ø32 ⁽¹⁾	ø32 ⁽¹⁾	ø32 ⁽¹⁾
Maximum electricity demand		A	5	5	5
Packaging measurements		m ³	0.23	0.37	0.37
Adaptable air panel model			P-N23DNA	P-N46DNA	P-N46DNA
Colour (Munsell code)			Neutral white (4.56Y8.85/0.38)		
Outer measurements	Height	mm	30+10	30+10	30+10
	Width	mm	1100	1660	1660
	Depth	mm	710	710	710
Net weight		kg	6	8	8
Packaging measurements		m ³	0.10	0.15	0.15
Remote control			PC-ART (PC-ARF)		
⁽¹⁾ Outer diameter.					
The data obtained is based on the operating conditions described in <i>Considerations</i> , see on page 70.					

◆ RPC - Ceiling type
RPC-(2.0-3.0)FSN2E

MODEL			RPC-2.0FSN2E	RPC-2.5FSN2E	RPC-3.0FSN2E
Power supply			1~ 230V 50Hz		
Nominal cooling capacity (UTOPIA)	kW		5.0	6.0	7.1
Nominal heating capacity (UTOPIA)	kW		5.6	7.0	8.0
Nominal cooling capacity (SET-FREE)	kW		5.6	7.1	8.0
Nominal heating capacity (SET-FREE)	kW		6.3	8.5	9.0
Air flow	Speed (high/medium/low)	m ³ /min	15/13/10	18/16/12	21/17/15
Electric fan output power		W	75	75	75
Sound pressure level	Speed (high/medium/low)	dB(A)	44/42/38	46/43/41	48/45/42
Sound power level		dB(A)	60	60	65
Outer measurements	Height	mm	163	163	163
	Width	mm	1094	1314	1314
	Depth	mm	625	625	625
Net weight		kg	28	31	31
Refrigerant			R410A (factory-charged corrosion-proof nitrogen)		
Refrigerant pipe connection			Flare nuts		
Refrigerant pipe size	Liquid	mm (in)	ø6.35 (1/4)	ø9.53 (3/8)	ø9.53 (3/8)
	Gas	mm (in)	ø15.88 (5/8)	ø15.88 (5/8)	ø15.88 (5/8)
Condensate drain connection		mm	ø25 ⁽¹⁾	ø25 ⁽¹⁾	ø25 ⁽¹⁾
Maximum electricity demand		A	5	5	5
Packaging measurements		m ³	0.24	0.29	0.29
Colour (Munsell code)			Spring white (4.1Y8.5/0.7)		
Remote control			PC-ART (PC-ARF)		
⁽¹⁾ Outer diameter.					
The data obtained is based on the operating conditions described in Considerations , see on page 70.					

RPC-(4.0-6.0)FSN2E

MODEL			RPC-4.0FSN2E	RPC-5.0FSN2E	RPC-6.0FSN2E
Power supply			1~ 230V 50Hz		
Nominal cooling capacity (UTOPIA)	kW		10.0	12.5	14.0
Nominal heating capacity (UTOPIA)	kW		11.2	14.0	16.0
Nominal cooling capacity (SET-FREE)	kW		11.2	14.0	16.0
Nominal heating capacity (SET-FREE)	kW		12.5	16.0	18.0
Air flow	Speed (high/medium/low)	m ³ /min	30/24/19	35/28/21	37/32/27
Electric fan output power		W	145	145	145
Sound pressure level	Speed (high/medium/low)	dB(A)	49/45/39	49/46/41	50/48/44
Sound power level		dB(A)	65	65	66
Outer measurements	Height	mm	225	225	225
	Width	mm	1314	1574	1574
	Depth	mm	625	625	625
Net weight		kg	35	41	41
Refrigerant			R410A (factory-charged corrosion-proof nitrogen)		
Refrigerant pipe connection			Flare nuts		
Refrigerant pipe size	Liquid	mm (in)	ø9.53 (3/8)	ø9.53 (3/8)	ø9.53 (3/8)
	Gas	mm (in)	ø15.88 (5/8)	ø15.88 (5/8)	ø15.88 (5/8)
Condensate drain connection		mm	ø25 ⁽¹⁾	ø25 ⁽¹⁾	ø25 ⁽¹⁾
Maximum electricity demand		A	5	5	5
Packaging measurements		m ³	0.36	0.43	0.43
Colour (Munsell code)			Spring white (4.1Y8.5/0.7)		
Remote control			PC-ART (PC-ARF)		
⁽¹⁾ Outer diameter.					
The data obtained is based on the operating conditions described in Considerations , see on page 70.					

◆ RPI - Indoor ducted unit
RPI-(0.8-1.5)FSN4E

MODEL			RPI-0.8FSN4E	RPI-1.0FSN4E	RPI-1.5FSN4E
Power supply			1~ 230V 50Hz		
Nominal cooling capacity (UTOPIA)	kW		2.0	2.5	3.6
Nominal heating capacity (UTOPIA)	kW		2.2	2.8	4.0
Nominal cooling capacity (SET-FREE)	kW		2.2	2.8	4.0
Nominal heating capacity (SET-FREE)	kW		2.5	3.2	4.8
Air flow (SP-00) ⁽²⁾	Speed (high/medium/low)	m ³ /min	8/7/6	8/7/6	10/9/8
External static pressure	Nom. (min.-max.)	Pa	32 (0-50)	32 (0-50)	27 (0-52)
Electric fan output power		W	60	60	60
Sound pressure level (SP-00) ⁽²⁾	Speed (high/medium/low)	dB(A)	33/31/29	33/31/29	34/31/29
Sound power level	Speed (High)	dB(A)	61	61	62
Outer measurements	Height	mm	197	197	197
	Width	mm	1084	1084	1084
	Depth	mm	600	600	600
Net weight		kg	29	29	30
Refrigerant	R410A (factory-charged corrosion-proof nitrogen)				
Refrigerant pipe connection	Flare nuts				
Refrigerant pipe size	Liquid	mm (in)	ø6.35 (1/4)	ø6.35 (1/4)	ø6.35 (1/4)
	Gas	mm (in)	ø12.7 (1/2)	ø12.7 (1/2)	ø12.7 (1/2)
Condensate drain connection		mm	ø32 ⁽¹⁾	ø32 ⁽¹⁾	ø32 ⁽¹⁾
Maximum electricity demand		A	5	5	5
Packaging measurements		m ³	0.18	0.18	0.18
Standard accessories	Air filter, drain pump				
Remote control	PC-ART (PC-ARF)				

⁽¹⁾ Outer diameter.

⁽²⁾SP: static pressure (setting throw Optional Functions "C5" in the remote control: 01=High external static pressure, 00=Std. and 02=Low external static pressure).

The data obtained is based on the operating conditions described in [Considerations](#), see on page 70.

RPI-(2.0-3.0)FSN4E

MODEL			RPI-2.0FSN4E	RPI-2.5FSN4E	RPI-3.0FSN4E
Power supply			1~ 230V 50Hz		
Nominal cooling capacity (UTOPIA)	kW		5.0	6.3	7.1
Nominal heating capacity (UTOPIA)	kW		5.6	7.0	8.0
Nominal cooling capacity (SET-FREE)	kW		5.6	7.1	8.0
Nominal heating capacity (SET-FREE)	kW		6.3	8.5	9.0
Air flow (SP-00) ⁽²⁾	Speed (high/medium/low)	m ³ /min	16/15/13	19/17/15	22/20/17
External static pressure	Nom. (min.-max.)	Pa	30 (0-120)	30 (0-140)	30 (0-150)
Electric fan output power		W	60	150	150
Sound pressure level (SP-02) ⁽²⁾	Speed (high/medium/low)	dB(A)	29/29/27	30/30/28	31/31/29
Sound power level (SP-02) ⁽²⁾	Speed (high)	dB(A)	55	56	57
Outer measurements	Height	mm	275	275	275
	Width	mm	1084	1084	1084
	Depth	mm	600	600	600
Net weight		kg	35	36	36
Refrigerant			R410A (factory-charged corrosion-proof nitrogen)		
Refrigerant pipe connection			Flare nuts		
Refrigerant pipe size	Liquid	mm (in)	ø6.35 (1/4)	ø9.53 (3/8)	ø9.53 (3/8)
	Gas	mm (in)	ø15.88 (5/8)	ø15.88 (5/8)	ø15.88 (5/8)
Condensate drain connection		mm	ø32 ⁽¹⁾	ø32 ⁽¹⁾	ø32 ⁽¹⁾
Maximum electricity demand		A	5	5	5
Packaging measurements		m ³	0.25	0.25	0.25
Standard accessories			Air filter, drain pump		
Remote control			PC-ART (PC-ARF)		
⁽¹⁾ Outer diameter.					
⁽²⁾ SP: static pressure.					
The data obtained is based on the operating conditions described in Considerations , see on page 70.					

RPI-(4.0-6.0)FSN4E

MODEL			RPI-4.0FSN4E	RPI-5.0FSN4E	RPI-6.0FSN4E
Power supply			1~ 230V 50Hz		
Nominal cooling capacity (UTOPIA)	kW		10.0	12.5	14.0
Nominal heating capacity (UTOPIA)	kW		11.2	14.0	16.0
Nominal cooling capacity (SET-FREE)	kW		11.2	14.0	16.0
Nominal heating capacity (SET-FREE)	kW		12.5	16.0	18.0
Air flow (SP-02) ⁽²⁾	Speed (high/medium/low)	m ³ /min	30/28/25	35/32/28	36/33/29
External static pressure	Nom. (min.-max.)	Pa	45 (0-110)	50 (0-140)	50 (0-150)
Electric fan output power			250	250	250
Sound pressure level	Speed (high/medium/low)	dB(A)	37/35/32 (SP-00) ⁽²⁾	38/35/33 (SP-01) ⁽²⁾	39/36/33 (SP-01) ⁽²⁾
Sound power level	Speed (high)	dB(A)	62 (SP-00) ⁽²⁾	65 (SP-01) ⁽²⁾	66 (SP-01) ⁽²⁾
Outer measurements	Height	mm	275	275	275
	Width	mm	1474	1474	1474
	Depth	mm	600	600	600
Net weight			48	48	48
Refrigerant			R410A (factory-charged corrosion-proof nitrogen)		
Refrigerant pipe connection			Flare nuts		
Refrigerant pipe size	Liquid	mm (in)	ø9.53 (3/8)	ø9.53 (3/8)	ø9.53 (3/8)
	Gas	mm (in)	ø15.88 (5/8)	ø15.88 (5/8)	ø15.88 (5/8)
Condensate drain connection			ø32 ⁽¹⁾	ø32 ⁽¹⁾	ø32 ⁽¹⁾
Maximum electricity demand			5	5	5
Packaging measurements			0.33	0.33	0.33
Standard accessories			Air filter, drain pump		
Remote control			PC-ART (PC-ARF)		
⁽¹⁾ Outer diameter.					
⁽²⁾ SP: static pressure (setting throw Optional Functions "C5" in the remote control: 01=High external static pressure. 00=Std. and 02=Low external static pressure).					
The data obtained is based on the operating conditions described in Considerations , see on page 70.					

RPI-(8.0/10.0)FSN3E

MODEL			RPI-8.0FSN3E	RPI-10.0FSN3E
Power supply			1~ 230V 50Hz	
Nominal cooling capacity (UTOPIA) ⁽⁴⁾	kW		20.0	25.0
Nominal heating capacity (UTOPIA)	kW		22.4	28.0
Nominal cooling capacity (SET-FREE)	kW		22.4	28.0
Nominal heating capacity (SET-FREE)	kW		25.0	31.0
Air flow (HSP) ⁽²⁾	Speed (high/medium/low)	m ³ /min	66/66/60	75/75/68.5
Air flow (LSP) ⁽³⁾	Speed (high/medium/low)	m ³ /min	66/66/59.5	75/75/67.6
Static pressure (HSP) ⁽²⁾		Pa	220/220/180	220/220/180
Static pressure (LSP) ⁽³⁾		Pa	180/180/140	180/180/140
Electric fan output power		W	1065	1065
Sound pressure level	Speed (high/medium/low)	dB(A)	54/54/51	55/55/52
Sound power level		dB(A)	77	78
Outer measurements	Height	mm	423	423
	Width	mm	1592	1592
	Depth	mm	600	600
Net weight		kg	85	87
Refrigerant	R410A (factory-charged corrosion-proof nitrogen)			
Refrigerant pipe connection	Welded connection			
Refrigerant pipe size	Liquid	mm (in)	ø9.53 (3/8)	ø9.53 (3/8)
	Gas	mm (in)	ø19.05 (3/4) ⁽⁵⁾	ø22.2 (7/8) ⁽⁵⁾
Condensate drain connection		mm	ø25 ⁽¹⁾	ø25 ⁽¹⁾
Maximum electricity demand		A	10	10
Packaging measurements		m ³	0.68	0.68
Remote control	PC-ART (PC-ARF)			
⁽¹⁾ Outer diameter. ⁽²⁾ HSP: high static pressure. ⁽³⁾ LSP: low static pressure; predetermined setting. ⁽⁴⁾ With UTOPIA IVX (HRNM) outdoor unit. ⁽⁵⁾ Indoor unit supplied with a reduction for systems with UTOPIA IVX (HRNM) outdoor unit. The data obtained is based on the operating conditions described in Considerations , see on page 70.				

◆ RPIM - Indoor ducted unit
RPIM-(0.8-1.5)FSN4E (-DU)

MODEL			RPIM-0.8FSN4E (-DU)	RPIM-1.0FSN4E (-DU)	RPIM-1.5FSN4E (-DU)
Power supply			1~ 230V 50Hz		
Nominal cooling capacity (UTOPIA)	kW		2.0	2.5	3.6
Nominal heating capacity (UTOPIA)	kW		2.2	2.8	4.0
Nominal cooling capacity (SET FREE)	kW		2.2	2.8	4.0
Nominal heating capacity (SET FREE)	kW		2.5	3.2	4.8
Air flow (SP-00) ⁽²⁾	Speed (high/medium/ low)	m ³ /min	8/8/6	8/8/6	10/10/8
External static pressure	Nom. (min.-max.)	Pa	32 (0-50)	32 (0-50)	27 (0-58)
Electric fan output power		W	60	60	60
Sound pressure level (SP-00) ⁽²⁾	Speed (high/medium/ low)	dB(A)	31/29/27	31/29/27	33/30/28
Sound power level (SP-00) ⁽²⁾	Speed (High)	dB(A)	59	59	61
Outer measurements	Height	mm	275	275	275
	Width	mm	702	702	702
	Depth	mm	600	600	600
Net weight		kg	26	26	26
Refrigerant			R410A (factory-charged corrosion-proof nitrogen)		
Refrigerant pipe connection			Flare nuts		
Refrigerant pipe size	Liquid	mm (in)	ø6.35 (1/4)	ø6.35 (1/4)	ø6.35 (1/4)
	Gas	mm (in)	ø12.7 (1/2)	ø12.7 (1/2)	ø12.7 (1/2)
Condensate drain connection		mm	ø25 ⁽¹⁾	ø25 ⁽¹⁾	ø25 ⁽¹⁾
Maximum electricity demand		A	5	5	5
Packaging measurements		m ³	0.17	0.17	0.17
Standard accessories			Air filter		
Remote control			PC-ART (PC-ARF)		
⁽¹⁾ Outer diameter.					
⁽²⁾ SP: static pressure (setting throw Optional Functions "C5" in the remote control: 01=High external static pressure. 00=Std. and 02=Low external static pressure).					
The data obtained is based on the operating conditions described in <i>Considerations</i> , see on page 70.					

◆ RPK - Wall type
RPK-(0.8-1.5)FSN(H)3M

MODEL			RPK-0.8FSN3M	RPK-1.0FSN(H)3M	RPK-1.5FSN(H)3M
Power supply			1~ 230V 50Hz		
Nominal cooling capacity (UTOPIA)	kW		2.0	2.8	3.6
Nominal heating capacity (UTOPIA)	kW		2.2	2.5	4.0
Nominal cooling capacity (SET FREE)	kW		2.2	2.8	4.0
Nominal heating capacity (SET FREE)	kW		2.5	3.2	4.8
Air flow	Speed (high H/high/medium/ low)	m ³ /min	10/8/7/6.5	10/8/7/6.5	14/11/9/7.5
Electric fan output power		W	40	40	40
Sound pressure level	Speed (high H/high/medium/ low)	dB(A)	39/35/32/30	39/35/32/30	46/40/36/33
Sound power level		dB(A)	53	53	58
Outer measurements	Height	mm	300	300	300
	Width	mm	790	790	900
	Depth	mm	230	230	230
Net weight		kg	10	10	11
Refrigerant			R410A (factory-charged corrosion-proof nitrogen)		
Refrigerant pipe connection			Flare nuts		
Refrigerant pipe size	Liquid	mm (in)	ø6.35 (1/4)	ø6.35 (1/4)	ø6.35 (1/4)
	Gas	mm (in)	ø12.7 (1/2)	ø12.7 (1/2)	ø12.7 (1/2)
Condensate drain connection			VP16	VP16	VP16
Maximum electricity demand		A	5	5	5
Packaging measurements		m ³	0.09	0.09	0.11
Colour			White		
Remote control			PC-ARF/PC-LH3B		
The data obtained is based on the operating conditions described in Considerations , see on page 70.					

3

RPK-(2.0-4.0)FSN3M

MODEL			RPK-2.0FSN3M	RPK-2.5FSN3M	RPK-3.0FSN3M	RPK-4.0FSN3M
Power supply			1~ 230V 50Hz			
Nominal cooling capacity (UTOPIA)	kW		5.0	6.0	7.1	10.0
Nominal heating capacity (UTOPIA)	kW		5.6	7.0	8.0	11.2
Nominal cooling capacity (SET FREE)	kW		5.6	7.1	8.0	11.2
Nominal heating capacity (SET FREE)	kW		6.3	8.5	9.0	12.5
Air flow	Speed (high H/high/ medium/low)	m ³ /min	15/14/13/10	19/17/14/12	19/17/14/12	22/19/17/15
Electric fan output power		W	40	40	40	40
Sound pressure level	Speed (high H/high/ medium/low)	dB(A)	42/40/38/33	49/43/40/36	49/43/40/36	51/49/46/41
Sound power level		dB(A)	56	59	59	64
Outer measurements	Height	mm	333	333	333	333
	Width	mm	1150	1150	1150	1150
	Depth	mm	245	245	245	245
Net weight		kg	17	18	18	18
Refrigerant			R410A (factory-charged corrosion-proof nitrogen)			
Refrigerant pipe connection			Flare nuts			
Refrigerant pipe size	Liquid	mm (in)	ø6.35 (1/4)	ø9.52 (3/8)	ø9.52 (3/8)	ø9.52 (3/8)
	Gas	mm (in)	ø15.88 (5/8)	ø15.88 (5/8)	ø15.88 (5/8)	ø15.88 (5/8)
Condensate drain connection			VP16	VP16	VP16	VP16
Maximum electricity demand		A	5	5	5	5
Packaging measurements		m ³	0.14	0.14	0.14	0.14
Colour			White			
Remote control			PC-ARF / PC-LH3B			
The data obtained is based on the operating conditions described in Considerations , see on page 70.						

◆ RPF - Floor type and RRFI - Floor concealed type
RPF-(1.0-2.5)FSN2E

MODEL			RPF-1.0FSN2E	RPF-1.5FSN2E	RPF-2.0FSN2E	RPF-2.5FSN2E
Power supply			1~ 230V 50Hz			
Nominal cooling capacity (UTOPIA)	kW		2.5	3.6	5.0	6.0
Nominal heating capacity (UTOPIA)	kW		2.8	4.0	5.6	7.0
Nominal cooling capacity (SET FREE)	kW		2.8	4.0	5.6	7.1
Nominal heating capacity (SET FREE)	kW		3.2	4.8	6.3	8.5
Air flow	Speed (high/medium/low)	m ³ /min	8.5/7/6	12/10/9	16/14/11	16/14/11
Electric fan output power		W	20	28	45	45
Sound pressure level	Speed (high/medium/low)	dB(A)	35/32/29	38/35/31	39/36/32	42/38/34
Sound power level		dB(A)	57	60	61	64
Outer measurements	Height	mm	630	630	630	630
	Width	mm	1045	1170	1420	1420
	Depth	mm	220	220	220	220
Net weight		kg	25	28	33	34
Refrigerant			R410A (factory-charged corrosion-proof nitrogen)			
Refrigerant pipe connection			Flare nuts			
Refrigerant pipe size	Liquid	mm (in)	ø6.35 (1/4)	ø6.35 (1/4)	ø6.35 (1/4)	ø9.53 (3/8)
	Gas	mm (in)	ø12.7 (1/2)	ø12.7 (1/2)	ø15.88 (5/8)	ø15.88 (5/8)
Condensate drain connection		mm	ø18.5 ⁽¹⁾	ø18.5 ⁽¹⁾	ø18.5 ⁽¹⁾	ø18.5 ⁽¹⁾
Maximum electricity demand		A	5	5	5	5
Packaging measurements		m ³	0.22	0.24	0.29	0.29
Colour (Munsell code)			Spring white (4.1Y8.5/0.7)			
Remote control			PC-ART (PC-ARF)			
⁽¹⁾ Outer diameter.						
The data obtained is based on the operating conditions described in Considerations , see on page 70.						

RPFI-(1.0-2.5)FSN2E

MODEL			RPFI-1.0FSN2E	RPFI-1.5FSN2E	RPFI-2.0FSN2E	RPFI-2.5FSN2E
Power supply			1~ 230V 50Hz			
Nominal cooling capacity (UTOPIA)	kW		2.5	3.6	5.0	6.0
Nominal heating capacity (UTOPIA)	kW		2.8	4.0	5.6	7.0
Nominal cooling capacity (SET FREE)	kW		2.8	4.0	5.6	7.1
Nominal heating capacity (SET FREE)	kW		3.2	4.8	6.3	8.5
Air flow	Speed (high/medium/low)	m ³ /min	8.5/7/6	12/10/9	16/14/11	16/14/11
Electric fan output power		W	20	28	45	45
Sound pressure level	Speed (high/medium/low)	dB(A)	35/32/29	38/35/31	39/36/32	42/38/34
Sound power level		dB(A)	57	60	61	64
Outer measurements	Height	mm	620	620	620	620
	Width	mm	848	973	1223	1223
	Depth	mm	220	220	220	220
Net weight		kg	19	23	27	28
Refrigerant			R410A (factory-charged corrosion-proof nitrogen)			
Refrigerant pipe connection			Flare nuts			
Refrigerant pipe size	Liquid	mm (in)	ø6.35 (1/4)	ø6.35 (1/4)	ø6.35 (1/4)	ø9.53 (3/8)
	Gas	mm (in)	ø12.7 (1/2)	ø12.7 (1/2)	ø15.88 (5/8)	ø15.88 (5/8)
Condensate drain connection		mm	ø18.5 ⁽¹⁾	ø18.5 ⁽¹⁾	ø18.5 ⁽¹⁾	ø18.5 ⁽¹⁾
Maximum electricity demand		A	5	5	5	5
Packaging measurements		m ³	0.22	0.23	0.25	0.25
Colour (Munsell code)			Spring white (4.1Y8.5/0.7)			
Remote control			PC-ART (PC-ARF)			
⁽¹⁾ Outer diameter.						
The data obtained is based on the operating conditions described in Considerations , see on page 70.						

3.1.2 Complementary systems

◆ Considerations

The sound pressure level has been measured in an anechoic chamber under the following conditions:

- 1 1.5 m below the unit (with no ceiling below the unit, using a sound-insulated duct).
- 2 Suction duct 1 m away and discharge duct 2 m away.
- 3 Power supply: 230 V.



NOTE

Data obtained in an anechoic chamber and, therefore, the sound indicated must be taken into account when installing the unit.

◆ KPI Energy recovery series
KPI-(252-802)E3E

MODEL			KPI-252E3E	KPI-502E3E	KPI-802E3E
Electrical power supply		□	1~ 230V 50Hz		
Air flow rate	Hi/Me/Lo	m ³ /h	250/208/180	500/420/360	800/700/597
Static pressure ⁽¹⁾	Hi/Me/Lo	Pa	60/40/30	77/50/47	100/75/55
Maximum external pressure (nom. air flow)		Pa	200	277	200
Heat Exchanger Element			Air to Air cross flow - Celluloid material		
Temperature exchange efficiency	High	%	75	75	75
Enthalpy exchange efficiency for heating	High	%	66	65	65
Enthalpy exchange efficiency for cooling	High	%	60	61	62
Sound pressure level ⁽²⁾	Hi/Me/Lo	dB(A)	27/26/24	30/28/27	32/31/30
External dimensions	Height	mm	270	330	385
	Width		900	1130	1210
	Depth		750	920	1015
Duct Connection diameter		mm	ø150	ø200	ø250
Nominal power input	Hi/Me/Lo	W	47/32/24	83/54/40	213/149/95
Specific Fan Power input (SFP)	High	W/(m ³ /s)	677	598	959
Nominal current consumption	High	A	0,2	0,4	1,0
Fan	Quantity	-	2	2	2
	Type	-	EC Fan		
Working Range ⁽³⁾			-20 °C (DB) ~ 46 °C (DB)		
Supplied Air Filter classification (acc. EN779) ⁽⁴⁾			G3	G3	G3
Remote controller (Optional)			PC-ART / PC-ARF		


NOTE

⁽¹⁾ *Default fan pressure setting.*

⁽²⁾ *Sound pressure level has been measured in an anechoic chamber, with the measuring point 1.5 m below the center of the unit, with no ceiling under the unit and using a sound insulated duct. Reflected sound must be considered when installing the unit in the field. Because of it the sound pressure level measured in an installation could be higher than the specification.*

⁽³⁾ *The installation of an electric heater is necessary when temperature becomes lower to -5°C(DB).*

⁽⁴⁾ *High efficiency filter classified as F7 (acc. EN779) is available as accessory.*

KPI-(1002-2002)E3E

MODEL			KPI-1002E3E	KPI-1502E3E	KPI-2002E3E
Electrical power supply		□	1~ 230V 50Hz		
Air flow rate	Hi/Me/Lo	m ³ /h	1000/800/620	1500/1250/970	2000/1560/1240
Static pressure ⁽¹⁾	Hi/Me/Lo	Pa	120/80/50	132/90/60	135/84/60
Maximum external pressure (nom. air flow)		Pa	195	246	180
Heat Exchanger Element	Air to Air cross flow - Celluloid material				
Temperature exchange efficiency	High	%	78	78	78
Enthalpy exchange efficiency for heating	High	%	68	68	66,5
Enthalpy exchange efficiency for cooling	High	%	62	62,5	61,5
Sound pressure level ⁽²⁾	Hi/Me/Lo	dB(A)	35/32/30	37/35/33	39/38/35
External dimensions	Height	mm	385	525	525
	Width		1600	1800	1800
	Depth		1295	1130	1430
Duct Connection diameter		mm	ø300	ø355	ø355
Nominal power input	Hi/Me/Lo	W	262/110/79	422/202/129	582/295/179
Specific Fan Power input (SFP)	High	W/(m ³ /s)	943	1013	1048
Nominal current consumption	High	A	1,2	1,9	2,7
Fan	Quantity	-	2	2	2
	Type	-	EC Fan		
Working Range ⁽³⁾	-20 °C (DB) ~ 46 °C (DB)				
Supplied Air Filter classification (acc. EN779) ⁽⁴⁾			G3	G3	G3
Remote controller (Optional)	PC-ART / PC-ARF				


NOTE

- ⁽¹⁾ *Default fan pressure setting.*
- ⁽²⁾ *Sound pressure level has been measured in an anechoic chamber, with the measuring point 1.5 m below the center of the unit, with no ceiling under the unit and using a sound insulated duct. Reflected sound must be considered when installing the unit in the field. Because of it the sound pressure level measured in an installation could be higher than the specification.*
- ⁽³⁾ *The installation of an electric heater is necessary when temperature becomes lower to -5 °C (DB).*
- ⁽⁴⁾ *High efficiency filter classified as F7 (acc. EN779) is available as accessory.*

◆ KPI Heat recovery series
KPI-(502-1002)H3E

MODEL			KPI-502H3E	KPI-802H3E	KPI-1002H3E	
Electrical power supply		□	1~ 230V 50Hz			
Air flow rate	Hi/Me/Lo	m ³ /h	500/420/360	800/700/597	1000/800/620	
Static pressure ⁽¹⁾	Hi/Me/Lo	Pa	77/50/47	100/75/55	120/80/50	
Maximum external pressure (nom. air flow)		Pa	277	200	195	
Heat Exchanger Element			Air to Air cross flow - Aluminium material			
Temperature exchange efficiency	High	%	53	50	50	
Enthalpy exchange efficiency for heating	High	%	35	34	33	
Enthalpy exchange efficiency for cooling	High	%	30	28	28	
Sound pressure level ⁽²⁾	Hi/Me/Lo	dB(A)	33/31/30	35/34/33	38/35/33	
External dimensions	Height	mm	330	385	385	
	Width		1130	1210	1600	
	Depth		920	1015	1295	
Duct Connection diameter		mm	ø200	ø250	ø300	
Nominal power input	Hi/Me/Lo	W	83/54/40	213/149/95	262/110/79	
Specific Fan Power input (SFP)	High	W/(m ³ /s)	598	959	943	
Nominal current consumption		High	A	0,4	1,0	1,2
Fan	Quantity	-	2	2	2	
	Type	-	EC Fan			
Working Range			-20 °C (DB) ~ 46 °C (DB)			
Supplied Air Filter classification (acc. EN779) ⁽³⁾			G3	G3	G3	
Remote controller (Optional)			PC-ART / PC-ARF			


NOTE

⁽¹⁾ *Default fan pressure setting.*

⁽²⁾ *Sound pressure level has been measured in an anechoic chamber, with the measuring point 1.5m below the center of the unit, with no ceiling under the unit and using a sound insulated duct. Reflected sound must be considered when installing the unit in the field. Because of it the sound pressure level measured in an installation could be higher than the specification.*

⁽³⁾ *High efficiency filter classified as F7 (acc. EN779) is available as accessory.*

KPI-(1502-2002)H3E

MODEL			KPI-1502H3E	KPI-2002H3E
Electrical power supply		□	1~ 230V 50Hz	
Air flow rate	Hi/Me/Lo	m³/h	1500/1250/970	2000/1560/1240
Static pressure ⁽¹⁾	Hi/Me/Lo	Pa	132/90/60	135/84/60
Maximum external pressure (nom. air flow)		Pa	246	180
Heat Exchanger Element	Air to Air cross flow - Aluminium material			
Temperature exchange efficiency	High	%	49	48
Enthalpy exchange efficiency for heating	High	%	31	31
Enthalpy exchange efficiency for cooling	High	%	27	28
Sound pressure level ⁽²⁾	Hi/Me/Lo	dB(A)	40//35/36	42/41/38
External dimensions	Height	mm	525	525
	Width		1800	1800
	Depth		1130	1430
Duct Connection diameter		mm	ø355	ø355
Nominal power input	Hi/Me/Lo	W	422/202/129	582/295/179
Specific Fan Power input (SFP)	High	W/(m³/s)	1013	1048
Nominal current consumption	High	A	1,9	2,7
Fan	Quantity	-	2	2
	Type	-	EC Fan	
Working Range	-20 °C (DB) ~ 46 °C (DB)			
Supplied Air Filter classification (acc. EN779) ⁽³⁾			G3	G3
Remote controller (Optional)	PC-ART / PC-ARF			


NOTE

⁽¹⁾ Default fan pressure setting.

⁽²⁾ Sound pressure level has been measured in an anechoic chamber, with the measuring point 1.5m below the center of the unit, with no ceiling under the unit and using a sound insulated duct. Reflected sound must be considered when installing the unit in the field. Because of it the sound pressure level measured in an installation could be higher than the specification.

⁽³⁾ High efficiency filter classified as F7 (acc. EN779) is available as accessory.

◆ KPI Active series
KPI-(502-1002)X3E

MODEL			KPI-502X3E	KPI-802X3E	KPI-1002X3E
Electrical power supply		□	1~ 230V 50Hz		
Nominal cooling capacity ⁽¹⁾		kW	5,32 (1,81)	7,96 (2,94)	10,83 (3,73)
Nominal heating capacity ⁽¹⁾		kW	6,92 (2,12)	9,79 (3,49)	12,93 (4,43)
Air flow rate	Hi/Me/Lo	m ³ /h	500/430/380	800/700/590	1000/820/740
Static pressure ⁽²⁾		Hi/Me/Lo	Pa	150/120/100	125/95/70
Maximum external pressure (nom. air flow)		Pa	235	125	125
Temperature exchange efficiency		Hi	%	75	75
Enthalpy exchange efficiency for heating		Hi	%	65	65
Enthalpy exchange efficiency for cooling		Hi	%	61	62
Sound pressure level ⁽³⁾		Hi/Me/Lo	dB(A)	29/27/26	31/30/29
External dimensions		Height	mm	330	385
		Width	mm	1630	1710
		Depth	mm	920	1015
Duct Connection diameter		mm	ø200	ø250	ø300
Refrigerant		-	R410		
Refrigerant piping connection		-	Flare nuts		
Size	Liquid piping	mm (in.)	ø6,35 1/4	ø6,35 1/4	ø9,53 3/8
	Gas piping	mm (in.)	ø12,7 1/2	ø15,88 5/8	ø15,88 5/8
Condensate drain connection		mm	ø32	ø32	ø32
Nominal power input		Hi/Me/Lo	W	159/99/72	272/190/122
Specific Fan Power input (SFP)		High	W/(m ³ /s)	1145	1224
Nominal current consumption		High	A	0,7	1,2
Fan	Quantity	-	2	2	2
	Type	-	EC Fan		
Working Range ⁽⁴⁾			-20 °C (DB) ~ 40 °C(DB)		
Supplied air filter classification (ecc EN779) ⁽⁵⁾			G3	G3	G3
Remote control (Optional)			PC-ART / PC-ARF		


NOTE

- ⁽¹⁾ The nominal cooling and heating capacity is the combined capacity of the outdoor and indoor units of the system and is based on Standard EN14511, with the following operating conditions:

	Cooling	Heating
Indoor Air Inlet Temperature	27 °C DB / 19 °C WB	20 °C DB / 14 °C WB
Outdoor Air Inlet Temperature	35 °C DB / 24 °C WB	7 °C DB / 6 °C WB

Pipe length: 7.5m; Pipe height: 0 m

Active KPI unit working at its nominal air flow

- ⁽²⁾ Default fan pressure setting.

- ⁽³⁾ Sound pressure level has been measured in an anechoic chamber, with the measuring point 1.5 m below the center of the unit, with no ceiling under the unit and using a sound insulated duct. Reflected sound must be considered when installing the unit in the field. Because of it the sound pressure level measured in an installation could be higher than the specification.

- ⁽⁴⁾ The installation of an electric heater is necessary when temperature becomes lower to -5 °C (DB). Cooling and heating performance may vary depending on working conditions because of control protections.

⁽⁵⁾ High efficiency filter classified as F7 (acc. EN779) is available as accessory.

◆ DX-Interface

		DX-Interface models						
		EXV-2.0E1	EXV-2.5E1	EXV-3.0E1	EXV-4.0E1	EXV-5.0E1	EXV-6.0E1	EXV-8.0E1
Control Box								
Casing colour		Natural Grey (Munsell 1.0Y8.5/0.5)						
Dimensions	Height	mm	291					
	Width	mm	341					
	Depth	mm	127					
Weight	kg	3.0						
Max. fan current	A	3.5						
Power supply		1~ 230V 50Hz						
Expansion valves								
Casing colour		White (RAL-9016)						
Dimensions	Height	mm	431					
	Width	mm	199					
	Depth	mm	103					
Weight	kg	2.0	2.7				4.5	
Piping connection	mm	ø6.35	ø9.53					
Accessories								
Remote controller		PC-ART (PC-ARF)						

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3.2 Component data

3.2.1 Indoor units

◆ RCI - 4-way cassette

RCI-(1.0-6.0)FSN3

RCI-(1.0-2.5)FSN3

MODEL		RCI-1.0FSN3	RCI-1.5FSN3	RCI-2.0FSN3	RCI-2.5FSN3
Heat exchanger					
Type		Multi-Pass Cross Finned Tube			
Tube material		Copper Tube			
Outer diameter	mm	5	5	5	5
Rows of tubes		2	2	2	3
No. of tubes in the coil		20	28	28	42
Fin material		Aluminium			
Fin pitch	mm	1.3	1.3	1.3	1.3
Maximum operating pressure	MPa	4.15	4.15	4.15	4.15
Total front area	m ²	7.6	10.6	10.6	15.8
No. of coils per unit		1	1	1	1
Fan					
Fan type		Multi-Blade Centrifugal Fan			
Fans per unit		1	1	1	1
Outer diameter	mm	490	490	490	490
Motor					
Shell		Drip-Proof Type Enclosure			
Starting		DC Motor			
Quantity		1	1	1	1
Insulation class		E	E	E	E

RCI-(3.0-6.0)FSN3

MODEL		RCI-3.0FSN3	RCI-4.0FSN3	RCI-5.0FSN3	RCI-6.0FSN3
Heat exchanger					
Type		Multi-Pass Cross Finned Tube			
Tube material		Copper Tube			
Outer diameter	mm	5	5	5	5
Rows of tubes		3	3	3	3
No. of tubes in the coil		54	54	54	54
Fin material		Aluminium			
Fin pitch	mm	1.3	1.3	1.3	1.3
Maximum operating pressure	MPa	4.15	4.15	4.15	4.15
Total front area	m ²	20.3	20.3	20.3	20.3
No. of coils per unit		1	1	1	1
Fan					
Fan type		Multi-Blade Centrifugal Fan			
Fans per unit		1	1	1	1
Outer diameter	mm	490	490	490	490
Motor					
Shell		Drip-Proof Type Enclosure			
Starting		DC Motor			
Quantity		1	1	1	1
Insulation class		E	E	E	E

RCI-(1.0-6.0)FSN3Ei
RCI-(1.0-2.5)FSN3Ei

MODEL		RCI-1.0FSN3E	RCI-1.5FSN3E	RCI-2.0FSN3E	RCI-2.5FSN3E
Heat exchanger					
Type		Multi-pass finned tube			
Tube material		Copper			
Outer diameter	mm	7	7	7	7
Rows of tubes		1	1	2	2
No. of tubes in the coil		8	8	16	16
Fin material		Aluminium			
Fin pitch	mm	1.5	1.5	1.5	1.5
Maximum operating pressure	MPa	4.15	4.15	4.15	4.15
Total front area	m ²	0.38	0.38	0.38	0.38
No. of coils per unit		1	1	1	1
Fan					
Fan type		Multi-blade turbo fan			
Fans per unit		1	1	1	1
Outer diameter	mm	490	490	490	490
Motor					
Shell		Splash-proof			
Starting		Direct current control			
Quantity		1	1	1	1
Insulation class		E	E	E	E

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RCI-(3.0-6.0)FSN3Ei

MODEL		RCI-3.0FSN3E	RCI-4.0FSN3E	RCI-5.0FSN3E	RCI-6.0FSN3E
Heat exchanger					
Type		Multi-pass finned tube			
Tube material		Copper			
Outer diameter	mm	7	7	7	7
Rows of tubes		2	3	3	3
No. of tubes in the coil		20	30	30	30
Fin material		Aluminium			
Fin pitch	mm	1.5	1.5	1.5	1.5
Maximum operating pressure	MPa	4.15	4.15	4.15	4.15
Total front area	m ²	0.47	0.47	0.47	0.47
No. of coils per unit		1	1	1	1
Fan					
Fan type		Multi-blade turbo fan			
Fans per unit		1	1	1	1
Outer diameter	mm	490	490	490	490
Motor					
Shell		Splash-proof			
Starting		Direct current control			
Quantity		1	1	1	1
Insulation class		E	E	E	E

RCIM - 4-way cassette (compact)
RCIM-(0.8-2.0)FSN2

MODEL		RCIM-0.8FSN2	RCIM-1.0FSN2	RCIM-1.5FSN2	RCIM-2.0FSN2
Heat exchanger					
Type		Multi-pass finned tube			
Tube material		Copper			
Outer diameter	mm	7	7	7	7
Rows of tubes		2	2	2	2
No. of tubes in the coil		14	14	14	14
Fin material		Aluminium			
Fin pitch	mm	1.5	1.5	1.5	1.5
Maximum operating pressure	MPa	4.15	4.15	4.15	4.15
Total front area	m ²	0.19	0.19	0.19	0.19
No. of coils per unit		1	1	1	1
Fan					
Fan type		Multi-blade centrifugal fan			
Fans per unit		1	1	1	1
Outer diameter	mm	298	298	298	298
Motor					
Shell		Drip-proof type enclosure			
Starting		Direct current control			
Quantity		1	1	1	1
Insulation class		E	E	E	E

◆ RCD - 2-way cassette
RCD-(1.0-2.5)FSN2

MODEL		RCD-1.0FSN2	RCD-1.5FSN2	RCD-2.0FSN2	RCD-2.5FSN2
Heat exchanger					
Type		Multi-pass finned tube			
Tube material		Copper			
Outer diameter	mm	7	7	7	7
Rows of tubes		2	2	2	2
No. of tubes in the coil		12	12	12	20
Fin material		Aluminium			
Fin pitch	mm	1.6	1.6	1.6	1.6
Maximum operating pressure	MPa	4.15	4.15	4.15	4.15
Total front area	m ²	0.36	0.36	0.36	0.36
No. of coils per unit		1	1	1	1
Fan					
Fan type		Multi-blade turbo fan			
Fans per unit		1	1	1	1
Outer diameter	mm	360	360	360	360
Motor					
Shell		Splash-proof			
Starting		Alternating current control			
Quantity		1	1	1	1
Insulation class		E	E	E	E

RCD-(3.0-5.0)FSN2

MODEL		RCD-3.0FSN2	RCD-4.0FSN2	RCD-5.0FSN2
Heat exchanger				
Type		Multi-pass finned tube		
Tube material		Copper		
Outer diameter	mm	7	7	7
Rows of tubes		2	2	2
No. of tubes in the coil		24	24	24
Fin material		Aluminium		
Fin pitch	mm	1.6	1.6	1.6
Maximum operating pressure	MPa	4.15	4.15	4.15
Total front area	m ²	0.36	0.63	0.63
No. of coils per unit		1	1	1
Fan				
Fan type		Multi-blade turbo fan		
Fans per unit		1	2	2
Outer diameter	mm	360	360	360
Motor				
Shell		Splash-proof		
Starting		Alternating current control		
Quantity		1	2	2
Insulation class		E	E	E

◆ RPC - Ceiling type
RPC-(2.0-3.0)FSN2E

MODEL		RPC-2.0FSN2E	RPC-2.5FSN2E	RCI-3.0FSN2E
Heat exchanger				
Type		Multi-pass finned tube		
Tube material		Copper		
Outer diameter	mm	7	7	7
Rows of tubes		3	3	3
No. of tubes in the coil		26	26	26
Fin material		Aluminium		
Fin pitch	mm	1.8	1.8	1.8
Maximum operating pressure	MPa	4.15	4.15	4.15
Total front area	m ²	0.14	0.18	0.18
No. of coils per unit		1	1	1
Fan				
Fan type		Centrifugal		
Fans per unit		3	3	4
Outer diameter	mm	101	101	101
Motor				
Shell		Splash-proof		
Starting		Permanent split capacitor		
Quantity		1	1	1
Insulation class		B	B	B

RPC-(4.0-6.0)FSN2E

MODEL		RPC-4.0FSN2E	RPC-5.0FSN2E	RPC-6.0FSN2E
Heat exchanger				
Type		Multi-pass finned tube		
Tube material		Copper		
Outer diameter	mm	7	7	7
Rows of tubes		3	3	3
No. of tubes in the coil		40	40	40
Fin material		Aluminium		
Fin pitch	mm	1.6	1.6	1.6
Maximum operating pressure	MPa	4.15	4.15	4.15
Total front area	m ²	0.27	0.34	0.34
No. of coils per unit		1	1	1
Fan				
Fan type		Centrifugal		
Fans per unit		3	4	4
Outer diameter	mm	136	136	136
Motor				
Shell		Splash-proof		
Starting		Permanent split capacitor		
Quantity		1	1	1
Insulation class		B	B	B

◆ RPI - Indoor ducted unit
RPI-(0.8-1.5)FSN4E

MODEL		RPI-0.8FSN4E	RPI-1.0FSN4E	RPI-1.5FSN4E
Heat exchanger				
Type		Multi-pass finned tube		
Tube material		Copper		
Outer diameter	mm	7	7	7
Rows of tubes		2	2	3
No. of tubes in the coil		16	16	24
Fin material		Aluminium		
Fin pitch	mm	1.8	1.8	1.8
Maximum operating pressure	MPa	4.15	4.15	4.15
Total front area	m ²	0.14	0.14	0.14
No. of coils per unit		1	1	1
Fan				
Fan type		Multi-blade centrifugal fan		
Fans per unit		2	2	2
Outer diameter	mm	136	136	136
Motor				
Shell		Splash-proof		
Starting		Direct current control		
Quantity		1	1	1
Insulation class		E	E	E

RPI-(2.0-3.0)FSN4E

MODEL		RPI-2.0FSN4E	RPI-2.5FSN4E	RPI-3.0FSN4E
Heat exchanger				
Type		Multi-pass finned tube		
Tube material		Copper		
Outer diameter	mm	7	7	7
Rows of tubes		2	3	3
No. of tubes in the coil		24	36	36
Fin material		Aluminium		
Fin pitch	mm	1.8	1.8	1.8
Maximum operating pressure	MPa	4.15	4.15	4.15
Total front area	m ²	0.21	0.21	0.21
No. of coils per unit		1	1	1
Ventilation				
Fan type		Multi-blade centrifugal fan		
Fans per unit		2	2	2
Outer diameter	mm	180	180	180
Motor				
Shell		Splash-proof		
Starting		Direct current control		
Quantity		1	1	1
Insulation class		E	E	E

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RPI-(4.0-6.0)FSN4E

MODEL		RPI-4.0FSN4E	RPI-5.0FSN4E	RPI-6.0FSN4E
Heat exchanger				
Type		Multi-pass finned tube		
Tube material		Copper		
Outer diameter	mm	7	7	7
Rows of tubes		4	4	4
No. of tubes in the coils		36	48	48
Fin material		Aluminium		
Fin pitch	mm	1.8	1.8	1.8
Maximum operating pressure	MPa	4.15	4.15	4.15
Total front area	m ²	0.30	0.30	0.30
No. of coils per unit		1	1	1
Fan				
Fan type		Multi-blade centrifugal fan		
Fans per unit		2	2	2
Outer diameter	mm	180	180	180
Motor				
Shell		Splash-proof		
Starting		Direct current control		
Quantity		1	1	1
Insulation class		E	E	E

RPI-(8.0/10.0)FSN3E

MODEL		RPI-8.0FSN3E	RPI-10.0FSN3E
Heat exchanger			
Type		Multi-pass finned tube	
Tube material		Copper	
Outer diameter	mm	7	7
Rows of tubes		3	4
No. of tubes in the coil		60	80
Fin material		Aluminium	
Fin pitch	mm	1.8	1.8
Maximum operating pressure	MPa	4.15	4.15
Total front area	m ²	0.57	0.57
No. of coils per unit		1	1
Fan			
Fan type		Multi-blade centrifugal fan	
Fans per unit		2	2
Outer diameter	mm	240	240
Motor			
Shell		Splash-proof	
Starting		Permanent split capacitor	
Quantity		1	1
Insulation class		F	F

◆ RPIM - Indoor ducted unit
RPIM-(0.8-1.5)FSN4E (-DU)

MODEL		RPIM-0.8FSN4E (-DU)	RPIM-1.0FSN4E (-DU)	RPIM-1.5FSN4E (-DU)
Heat exchanger				
Type		Multi-pass finned tube		
Tube material		Copper		
Outer diameter	mm	7	7	7
Rows of tubes		2	2	3
No. of tubes in the coil		24	24	36
Fin material		Aluminium		
Fin pitch	mm	1.8	1.8	1.8
Maximum operating pressure	MPa	4.15	4.15	4.15
Total front area	m ²	0.12	0.12	0.12
No. of coils per unit		1	1	1
Fan				
Fan type		Multi-blade centrifugal fan		
Fans per unit		1	1	1
Outer diameter	mm	185	185	185
Motor				
Shell		Splash-proof		
Starting		Direct current control		
Quantity		1	1	1
Insulation class		E	E	E

◆ RPK - Wall type
RPK-(0.8-1.5)FSN(H)3M

MODEL		RPK-0.8FSN(H)3M	RPK-1.0FSN(H)3M	RPK-1.5FSN(H)3M
Heat exchanger				
Type		Multi-pass finned tube		
Tube material		Copper		
Outer diameter	mm	7	7	7
Rows of tubes		2	2	2
No. of tubes in the coil		36	36	36
Fin material		Aluminium		
Fin pitch	mm	1.25	1.25	1.3
Maximum operating pressure	MPa	4.15	4.15	4.15
Total front area	m ²	0.20	0.20	0.20
No. of coils per unit		1	1	1
Fan				
Fan type		Multi-blade centrifugal		
Fans per unit		1	1	1
Outer diameter	mm	105	105	105
Motor				
Shell		Drip-proof type enclosure		
Starting		Direct current control		
Quantity		1	1	1
Insulation class		E	E	E

RPK-(2.0-4.0)FSN3M

MODEL		RPK-2.0FSN3M	RPK-2.5FSN3M	RPK-3.0FSN3M	RPK-4.0FSN3M
Heat exchanger					
Type		Multi-pass finned tube			
Tube material		Copper			
Outer diameter	mm	7	7	7	7
Rows of tubes		2	2	2	2
No. of tubes in the coil		30	46	46	46
Fin material		Aluminium			
Fin pitch	mm	1.2	1.3	1.3	1.3
Maximum operating pressure	MPa	4.15	4.15	4.15	4.15
Total front area	m ²	0.25	0.35	0.35	0.35
No. of coils per unit		1	1	1	1
Fan					
Fan type		Multi-blade centrifugal			
Fans per unit		1	1	1	1
Outer diameter	mm	105	105	105	105
Motor					
Shell		Drip-proof type enclosure			
Starting		Direct current control			
Quantity		1	1	1	1
Insulation class		E	E	E	E

◆ RPF - Floor type and RPFI - Floor concealed type
RPF-(1.0-2.5)FSN2E

MODEL		RPF-1.0FSN2E	RPF-1.5FSN2E	RPF-2.0FSN2E	RPF-2.5FSN2E
Heat exchanger					
Type		Multi-pass finned tube			
Tube material		Copper			
Outer diameter	mm	7	7	7	7
Rows of tubes		2	2	2	3
No. of tubes in the coil		24	24	24	36
Fin material		Aluminium			
Fin pitch	mm	1.8	1.8	1.8	1.8
Maximum operating pressure	MPa	4.15	4.15	4.15	4.15
Total front area	m ²	0.13	0.16	0.22	0.22
No. of coils per unit		1	1	1	1
Fan					
Fan type		Multi-blade centrifugal fan			
Fans per unit		1	2	2	2
Outer diameter	mm	136	136	136	136
Motor					
Shell		Splash-proof			
Starting		Permanent split capacitor			
Quantity		1	1	1	1
Insulation class		B	B	B	B

RPFI-(1.0-2.5)FSN2E

MODEL		RPFI-1.0FSN2E	RPFI-1.5FSN2E	RPFI-2.0FSN2E	RPFI-2.5FSN2E
Heat exchanger					
Type		Multi-pass finned tube			
Tube material		Copper			
Outer diameter	mm	7	7	7	7
Rows of tubes		2	2	2	3
No. of tubes in the coils		24	24	24	36
Fin material		Aluminium			
Fin pitch	mm	1.8	1.8	1.8	1.8
Maximum operating pressure	MPa	4.15	4.15	4.15	4.15
Total front area	m ²	0.13	0.16	0.22	0.22
No. of coils per unit		1	1	1	1
Fan					
Fan type		Multi-blade centrifugal fan			
Fans per unit		1	2	2	2
Outer diameter	mm	136	136	136	136
Motor					
Shell		Splash-proof			
Starting		Permanent split capacitor			
Quantity		1	1	1	1
Insulation class		B	B	B	B

3.3 Electrical data

3.3.1 Considerations

Key:

- U: power supply.
- PH: phase.
- f: frequency.
- IPT: total input power.
- RNC: operating current.
- MC: maximum current.



NOTE

The specifications given in the following tables are subject to change without prior notice.

3.3.2 Indoor units

RCI - 4-way cassette

Model	Main unit power supply			Applicable voltage		Fan motor			
	U (V)	PH	f (Hz)	Max. U (V)	Min. U (V)	IPT (kW)	RNC (A)	Max. IPT (kW)	MC (A)
RCI-1.0FSN3	230	1	50	253	207	0.04	0.2	0.04	5.0
RCI-1.5FSN3						0.06	0.3	0.06	5.0
RCI-2.0FSN3						0.08	0.4	0.08	5.0
RCI-2.5FSN3						0.15	0.8	0.15	5.0
RCI-3.0FSN3						0.15	0.8	0.15	5.0
RCI-4.0FSN3						0.18	1.0	0.18	5.0
RCI-5.0FSN3						0.20	1.1	0.20	5.0
RCI-6.0FSN3						0.20	1.1	0.20	5.0

Model	Main unit power supply			Applicable voltage		Fan motor			
	U (V)	PH	f (Hz)	Max. U (V)	Min. U (V)	IPT (kW)	RNC (A)	Max. IPT (kW)	MC (A)
RCI-1.0FSN3Ei	230	1	50	253	207	0.04	0.2	0.04	5.0
RCI-1.5FSN3Ei						0.05	0.2	0.05	5.0
RCI-2.0FSN3Ei						0.05	0.2	0.05	5.0
RCI-2.5FSN3Ei						0.06	0.3	0.06	5.0
RCI-3.0FSN3Ei						0.09	0.4	0.09	5.0
RCI-4.0FSN3Ei						0.11	0.7	0.11	5.0
RCI-5.0FSN3Ei						0.14	0.8	0.14	5.0
RCI-6.0FSN3Ei						0.18	1.0	0.18	5.0

RCIM - 4-way cassette (compact)

Model	Main unit power supply			Applicable voltage		Fan motor			
	U (V)	PH	f (Hz)	Max. U (V)	Min. U (V)	IPT (kW)	RNC (A)	Max. IPT (kW)	MC (A)
RCIM-0.8FSN2	220/240	1	50	264	198	0.06/0.06	0.3/0.3	0.07	5.0
RCIM-1.0FSN2						0.06/0.06	0.3/0.3	0.07	5.0
RCIM-1.5FSN2						0.07/0.07	0.4/0.4	0.08	5.0
RCIM-2.0FSN2						0.07/0.07	0.4/0.4	0.08	5.0

RCD - 2-way cassette

Model	Main unit power supply			Applicable voltage		Fan motor			
	U (V)	PH	f (Hz)	Max. U (V)	Min. U (V)	IPT (kW)	RNC (A)	Max. IPT (kW)	MC (A)
RCD-1.0FSN2	220/240	1	50	264	198	0.05/0.06	0.2/0.2	0.07	5.0
RCD-1.5FSN2						0.07/0.08	0.3/0.4	0.10	5.0
RCD-2.0FSN2						0.07/0.08	0.3/0.4	0.10	5.0
RCD-2.5FSN2						0.09/0.11	0.4/0.5	0.13	5.0
RCD-3.0FSN2						0.09/0.11	0.4/0.5	0.13	5.0
RCD-4.0FSN2						0.12/0.14	0.6/0.6	0.17	5.0
RCD-5.0FSN2						0.18/0.20	0.8/0.9	0.24	5.0

RPC - Ceiling type

Model	Main unit power supply			Applicable voltage		Fan motor			
	U (V)	PH	f (Hz)	Max. U (V)	Min. U (V)	IPT (kW)	RNC (A)	Max. IPT (kW)	MC (A)
RPC-2.0FSN2E	230	1	50	253	207	0.13	0.5	0.18	5.0
RPC-2.5FSN2E						0.13	0.6	0.18	5.0
RPC-3.0FSN2E						0.17	0.8	0.23	5.0
RPC-4.0FSN2E						0.18	0.8	0.24	5.0
RPC-5.0FSN2E						0.23	1.1	0.31	5.0
RPC-6.0FSN2E						0.23	1.1	0.31	5.0

RPI - Indoor ducted unit

Model	Main unit power supply			Applicable voltage		Fan motor			
	U (V)	PH	f (Hz)	Max. U (V)	Min. U (V)	IPT (kW)	RNC (A)	Max. IPT (kW)	MC (A)
RPI-0.8FSN4E	230	1	50	253	207	0.03	0.3	0.04	5.0
RPI-1.0FSN4E						0.03	0.3	0.04	5.0
RPI-1.5FSN4E						0.04	0.4	0.05	5.0
RPI-2.0FSN4E						0.04	0.4	0.10	5.0
RPI-2.5FSN4E						0.08	0.7	0.14	5.0
RPI-3.0FSN4E						0.11	0.9	0.20	5.0
RPI-4.0FSN4E						0.16	1.3	0.20	5.0
RPI-5.0FSN4E						0.20	1.7	0.27	5.0
RPI-6.0FSN4E						0.22	1.8	0.28	5.0
RPI-8.0FSN3E						0.97	4.5	1.75	10.0
RPI-10.0FSN3E						1.06	4.8	1.91	10.0

RPIM - Indoor ducted unit

Model	Main unit power supply			Applicable voltage		Fan motor			
	U (V)	PH	f (Hz)	Max. U (V)	Min. U (V)	IPT (kW)	RNC (A)	Max. IPT (kW)	MC (A)
RPIM-0.8FSN4E (-DU)	230	1	50	253	207	0.02	0.2	0.03	5.0
RPIM-1.0FSN4E (-DU)						0.02	0.2	0.03	5.0
RPIM-1.5FSN4E (-DU)						0.03	0.3	0.04	5.0

RPK - Wall type

Model	Main unit power supply			Applicable voltage		Fan motor			
	U (V)	PH	f (Hz)	Max. U (V)	Min. U (V)	IPT (kW)	RNC (A)	Max. IPT (kW)	MC (A)
RPK-0.8FSN(H)3M	230	1	50	253	207	0.02	0.2	0.03	5.0
RPK-1.0FSN(H)3M						0.02	0.2	0.03	5.0
RPK-1.5FSN(H)3M						0.05	0.4	0.06	5.0
RPK-2.0FSN3M						0.04	0.3	0.05	5.0
RPK-2.5FSN3M						0.07	0.5	0.08	5.0
RPK-3.0FSN3M						0.07	0.5	0.08	5.0
RPK-4.0FSN3M						0.08	0.6	0.09	5.0

RPF(I) - Floor type

Model	Main unit power supply			Applicable voltage		Fan motor			
	U (V)	PH	f (Hz)	Max. U (V)	Min. U (V)	IPT (kW)	RNC (A)	Max. IPT (kW)	MC (A)
RPF(I)-1.0FSN2E	230	1	50	253	207	0.04	0.2	0.05	5.0
RPF(I)-1.5FSN2E						0.05	0.2	0.07	5.0
RPF(I)-2.0FSN2E						0.09	0.4	0.12	5.0
RPF(I)-2.5FSN2E						0.09	0.4	0.12	5.0

3

3.3.3 Complementary systems
KPI energy / heat recovery unit

Model	Main unit power supply			Applicable voltage		Fan motor			
	U (V)	PH	f (Hz)	Max. U (V)	Min. U (V)	IPT (kW)	RNC (A)	Max. IPT (kW)	MC (A)
KPI-252E3E	230	1	50	253	207	0.05	0.4	0.09	4.0
KPI-502E3E						0.08	0.7	0.2	4.0
KPI-802E3E						0.21	1.7	0.27	4.0
KPI-1002E3E						0.26	1.9	0.34	8.0
KPI-1502E3E						0.47	2.3	0.62	8.0
KPI-2002E3E						0.58	2.8	0.64	8.0
KPI-502H3E						0.08	0.7	0.2	4.0
KPI-802H3E						0.21	1.7	0.27	4.0
KPI-1002H3E						0.26	1.9	0.34	8.0
KPI-1502H3E						0.47	2.3	0.62	8.0
KPI-2002H3E						0.58	2.8	0.64	8.0
KPI-502X3E						0.13	1.2	0.19	4.0
KPI-802X3E						0.24	1.9	0.24	4.0
KPI-1002X3E						0.31	2.2	0.31	8.0

4. System selection procedure

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4.1 System selection procedure

The following procedure is a full example that shows step by step how to select the most suitable units for your requirements. It also indicates how to use all of the parameters mentioned in this chapter.

Bearing in mind the building layout, the planned location of the indoor units and the air flow distribution, always select units that provide the most efficiency, performance and comfort.

Plan a location to install the outdoor unit that allows for easy maintenance and operating tasks and for the installing of refrigerant pipes.

The system selection procedure is as follows:

- 1 Selection of the outdoor unit and selection of the most suitable indoor-outdoor unit combination according to design conditions. To do so, consult the Technical Catalogue for the corresponding outdoor unit series (UTOPIA or SET FREE).
- 2 Correction of the theoretical capacity values taken from the different tables and inclusion of the necessary correction factors.

The selection procedure is divided into two main parts: cooling and heating, in line with the specific requirements of each installation.

4.2 Selection procedure for KPI

4.2.1 Selection guide

There are two methods for calculating the appropriate unit:

- 1 Area method.
- 2 Occupant method.

Local legislation regarding the certification of the end results must be checked.

This is a quick method for calculating ventilation requirements. Remember that the result is only approximate.

The air in the room must be renewed to reduce the CO₂ index in it and eliminate any unpleasant smells, smoke and pollution. In short, the room must be ventilated to provide its occupants with higher comfort levels.

The first point of the analysis consists of determining the type of activity to take place in the room: an office is not the same as a restaurant. The volume of the room in question must then be calculated.

Method 1: area method

This method is based on areas and on the quantity of air changes.

$$\text{Volume } V \text{ (m}^3\text{)} = A \times B \times C$$

A x B: area of the room (m²).

C: ceiling height (m).

Consult the table below to ascertain the number of air changes required, depending on the type of room.



NOTE

This table is not standard to all countries, although the layout will be similar. Consult the specific regulations in force in each country.

Required changes per hour	
Cathedral	0
Modern church (low ceiling)	1-2
Schools	2-3
Offices	3-4
Bars	4-6
Hospitals	5-6
Restaurants	5-6
Laboratories	6-8
Discos	10-12
Kitchens	10-15
Laundries	20-30

The flow of air to be changed is calculated using the following formula:

$$\text{Air flow } C \text{ (m}^3\text{/h)} = V \times N$$

V: volume of the room (m³).

N: number of air changes.

Considering an average height of 3 m, the appropriate KPI unit must be selected according to the fan performance curves (Air flow / External static pressure).

Method 2: occupant method

$$\text{Air flow (m}^3\text{)} C = 20 \times (A \times B)/D$$

A x B: area of the room (m²).

20: constant.

D: area occupied by each person (m²); this area is limited to 10.

4.2.2 Calculation of heat exchanger efficiency

The following process describes the way total efficiency of the KPI unit heat exchanger is obtained and the way of calculating the supply air temperature.

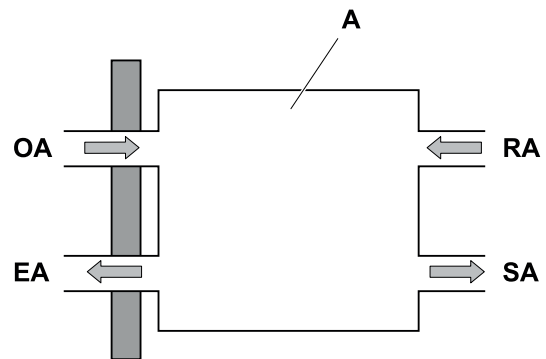
A: heat exchanger.

OA: fresh outdoor air.

EA: exhaust air.

SA: supply air.

RA: return air.



Nominal temperature exchange conditions				
Location	Indoor (RA)		Outdoor (OA)	
	Dry bulb	Wet bulb	Dry bulb	Wet bulb
Temperature (°C)				
Cooling (kW)	27±1	20±2	35±1	29±2
Heating (kW)	20±1	14±2	5±1	2±2

The supply and exhaust air flow volume is the same.

The equations used for the necessary parameters to calculate the operating conditions of the KPI unit are given below. It is first necessary to balance energy.

Temperature exchange efficiency (sensible exchange efficiency):

$$\eta_t = \frac{t(OA) - t(SA)}{t(OA) - t(RA)} \times 100 (\%)$$

Humidity exchange efficiency (latent exchange efficiency):

$$\eta_x = \frac{x(OA) - x(SA)}{x(OA) - x(RA)} \times 100 (\%)$$

Total heat exchange efficiency (enthalpy exchanger efficiency):

$$\eta_i = \frac{i(OA) - i(SA)}{i(OA) - i(RA)} \times 100 (\%)$$

The supply air temperature can be deduced by using the temperature exchange efficiency, according to the following formula:

$$t(SA) = t(OA) - \eta_t(t(OA) - t(RA))$$

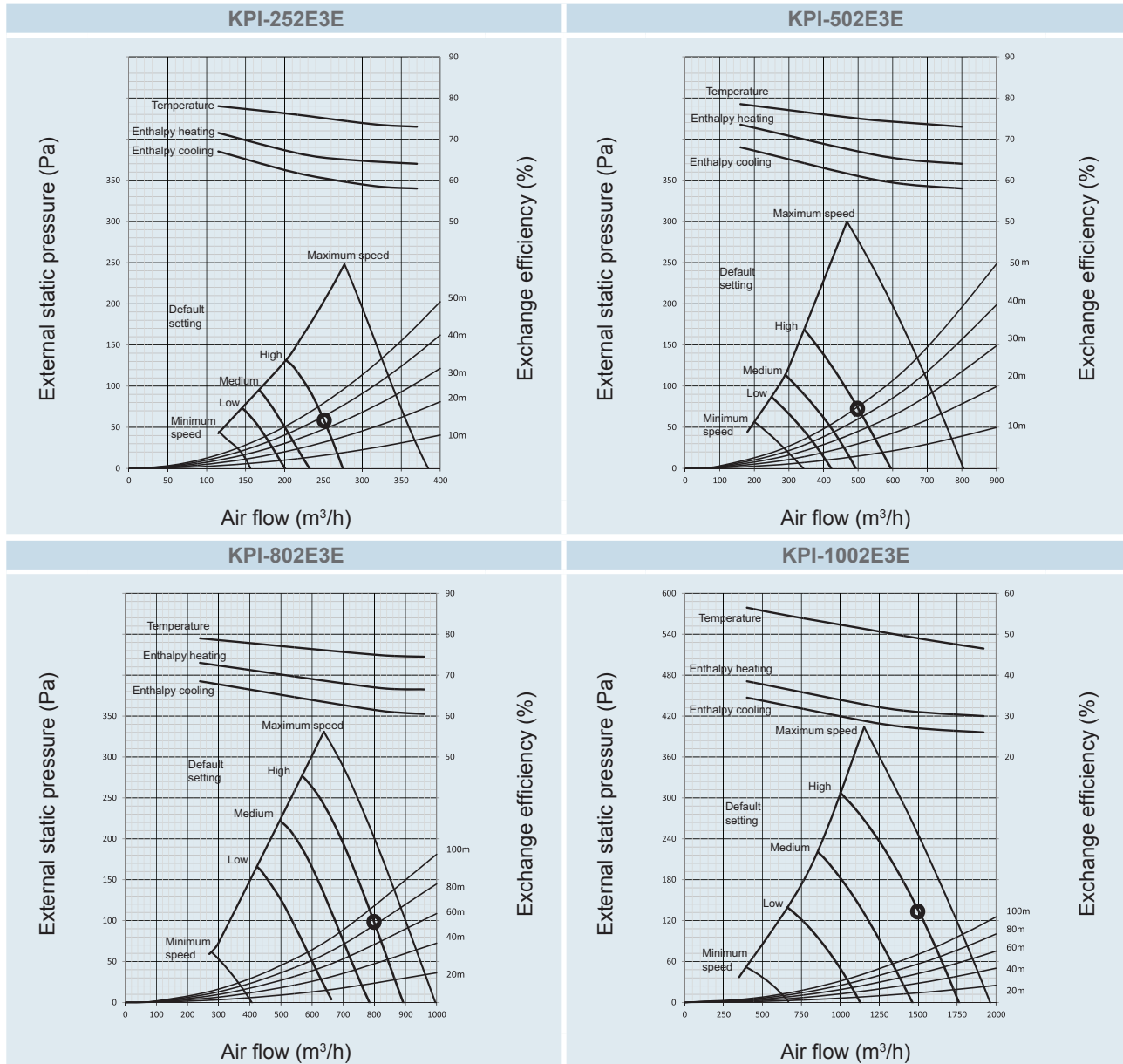
**NOTE**

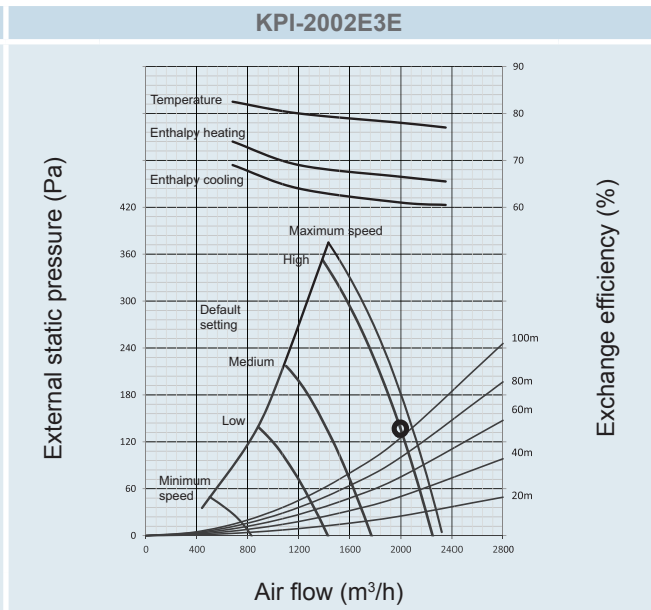
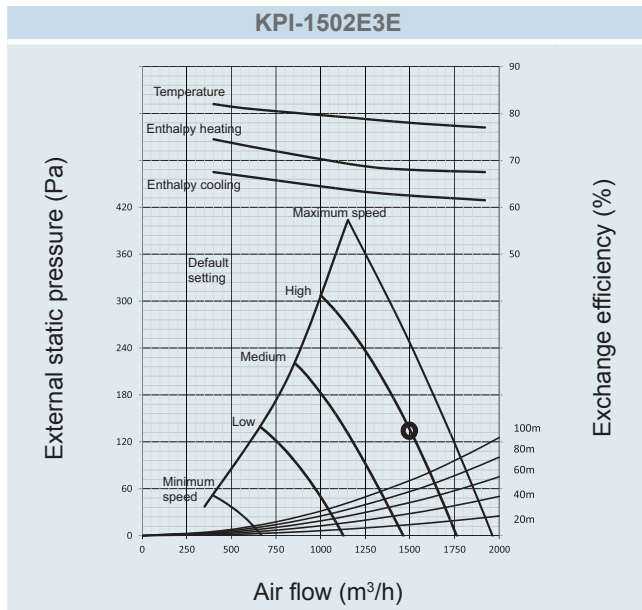
- η_t can be obtained from the graphs in Chapters **KPI-(252-2002)E3E units**, see on page 114 or **KPI-(502-2002)H3E units**, see on page 116.
- The temperature exchange efficiency is obtained by determining the air flow required.
 - Temperature t is expressed in °C DB (dry bulb).
 - Humidity x is expressed in kg_w / kg_a .
 - Enthalpy i is expressed in kJ / kg.



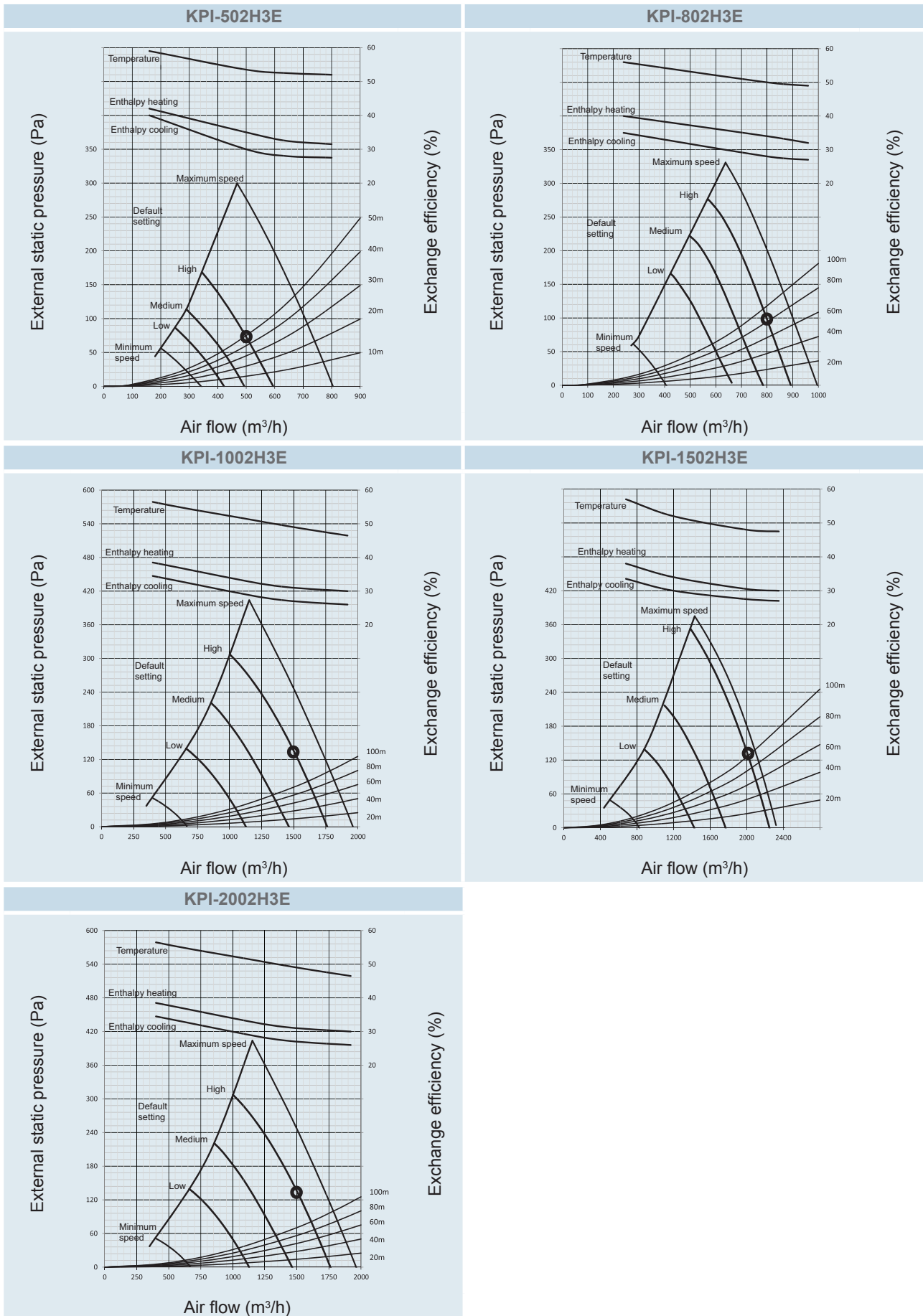
4.2.3 KPI energy / heat recovery unit

◆ KPI-(252-2002)E3E units

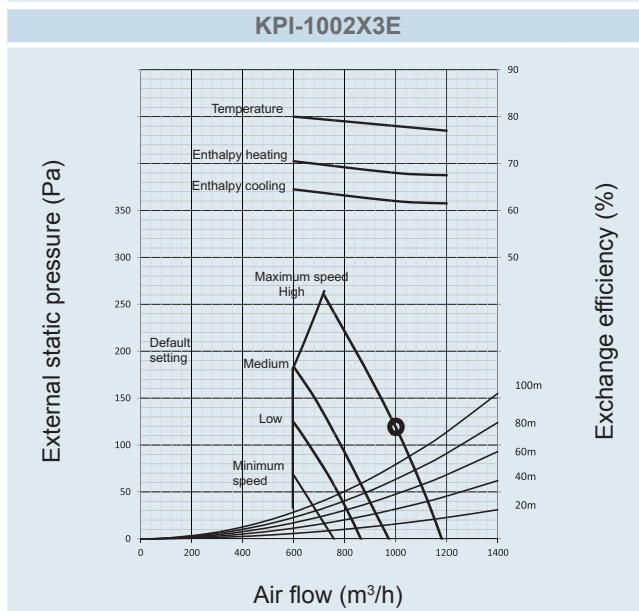
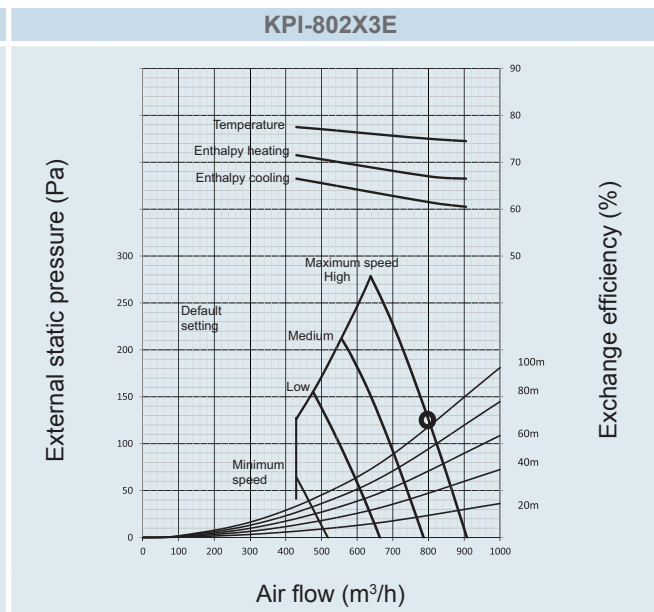
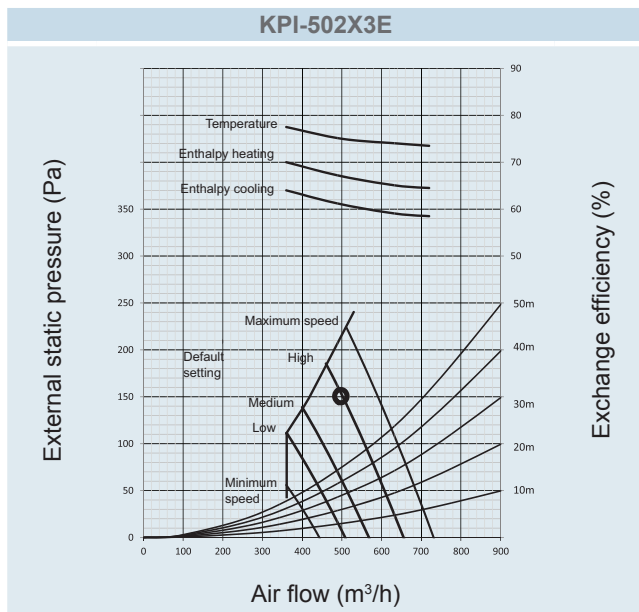




◆ **KPI-(502-2002)H3E units**



KPI-(502-1002)X3E units



4.3 Selection procedure for DX-interface

Outdoor unit						
UTOPIA		IVX Premium / IVX Standard		IVX ES		RASC
SET FREE		FS (V)N(Y)2E		FSXN FSN2		FSNM
Indoor unit connection requirements						
DX-Code	Mode	Allowed Heat exchanger Capacity (kW) ⁽¹⁾			Heat Exchanger Volume (dm ³)	
		Min	Nom	Max	Min	Max
EXV-2.0E1	Cooling	4.0	5.0	5.6	0.57	1.16
	Heating	4.5	5.6	7.1		
EXV-2.5E1	Cooling	4.8	6.0	6.3	0.89	1.35
	Heating	5.6	7.0	7.1		
EXV-3.0E1	Cooling	5.7	7.1	8.0	1.03	1.57
	Heating	6.4	8.0	9.0		
EXV-4.0E1	Cooling	8.0	10.0	11.2	1.51	2.37
	Heating	9.0	11.2	12.5		
EXV-5.0E1	Cooling	10.0	12.5	14.0	1.92	2.37
	Heating	11.2	14.0	16.0		
EXV-6.0E1	Cooling	11.2	14.0	16.0	1.92	2.92
	Heating	12.8	16.0	18.0		
EXV-8.0E1	Cooling	16.0	20.0	22.4	2.92	3.89
	Heating	17.9	22.4	25.0		
EXV-10.0E1	Cooling	20.0	25.0	28.0	3.89	4.76
	Heating	22.4	28.0	31.5		

⁽¹⁾ cooling and heating capacity data is based on the following indoor and outdoor temperature conditions, according standard EN14511.

Operation conditions		Cooling	Heating
Indoor air inlet temperature	DB	27.0 °C	20.0 °C
	WB	19.0 °C	-
Outdoor air inlet temperature	DB	35.0 °C	7.0 °C
	WB	-	6.0 °C

DB: dry bulb; WB: wet bulb

Pipe length: 7.5 m; pipe height: 0 m.



NOTE

- Check the unit or connected device to the DX- heat exchanger allow operating mode and use it exclusively in the proper mode.
- Please refer to Outdoor unit and unit or device connected Installation Manual and Technical Catalogue to ensure that the installation conditions are inside the working ranges.
- In case of installing DX-Interface and Hitachi indoor units to a common Set Free outdoor unit, total DX-Interface capacity cannot exceed the 30% of total system capacity.
- If only DX-Interface are connected to the Set Free outdoor unit, total DX-Kit capacity cannot exceed the 100% of outdoor unit capacity.

4.4 Sensible heat correction factor (SHF)

Sensible heat factor of the indoor units for each fan speed (high, medium, slow), according to the JIS B8616 Standard.

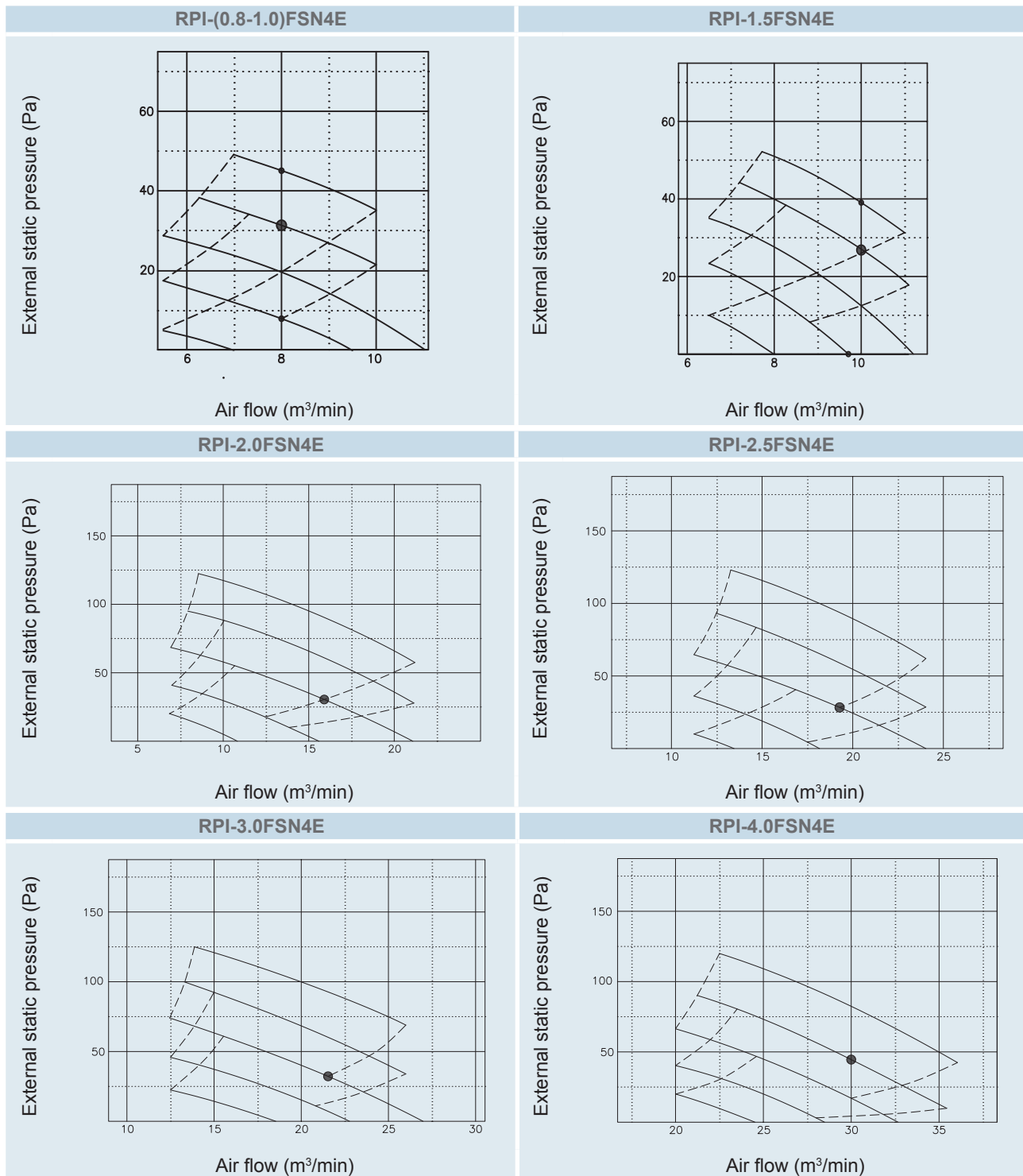
Indoor unit model	Sensible heat factor (SHF)		
	High	Medium	Low
RCI-1.0FSN3	0.80	0.77	0.75
RCI-1.5FSN3	0.77	0.75	0.73
RCI-2.0FSN3	0.78	0.76	0.75
RCI-2.5FSN3	0.73	0.71	0.69
RCI-3.0FSN3	0.79	0.76	0.72
RCI-4.0FSN3	0.78	0.75	0.72
RCI-5.0FSN3	0.74	0.70	0.68
RCI-6.0FSN3	0.73	0.69	0.68
RCI-1.0FSN3Ei	0.80	0.77	0.75
RCI-1.5FSN3Ei	0.77	0.75	0.73
RCI-2.0FSN3Ei	0.78	0.76	0.75
RCI-2.5FSN3Ei	0.73	0.71	0.69
RCI-3.0FSN3Ei	0.79	0.76	0.72
RCI-4.0FSN3Ei	0.78	0.75	0.72
RCI-5.0FSN3Ei	0.74	0.70	0.68
RCI-6.0FSN3Ei	0.73	0.69	0.68
RCIM-0.8FSN2	0.74	0.71	0.70
RCIM-1.0FSN2	0.74	0.71	0.70
RCIM-1.5FSN2	0.74	0.71	0.70
RCIM-2.0FSN2	0.71	0.68	0.67
RCD-1.0FSN2	0.81	0.76	0.75
RCD-1.5FSN2	0.73	0.69	0.66
RCD-2.0FSN2	0.75	0.67	0.65
RCD-2.5FSN2	0.74	0.67	0.65
RCD-3.0FSN2	0.74	0.67	0.65
RCD-4.0FSN2	0.73	0.67	0.65
RCD-5.0FSN2	0.69	0.67	0.65
RPC-2.0FSN2E	0.72	0.70	0.67
RPC-2.5FSN2E	0.72	0.70	0.67
RPC-3.0FSN2E	0.72	0.70	0.67
RPC-4.0FSN2E	0.72	0.70	0.67
RPC-5.0FSN2E	0.72	0.70	0.67
RPC-6.0FSN2E	0.72	0.70	0.67
RPI-0.8FSN4E	0.81	0.69	0.69
RPI-1.0FSN4E	0.81	0.69	0.69
RPI-1.5FSN4E	0.73	0.69	0.65
RPI-2.0FSN3E	0.76	0.75	0.74
RPI-2.5FSN3E	0.76	0.74	0.72
RPI-3.0FSN3E	0.75	0.71	0.67
RPI-4.0FSN3E	0.73	0.71	0.65
RPI-5.0FSN3E	0.72	0.68	0.64
RPI-6.0FSN3E	0.72	0.69	0.67
RPI-8.0FSN3E	0.77	0.77	0.70

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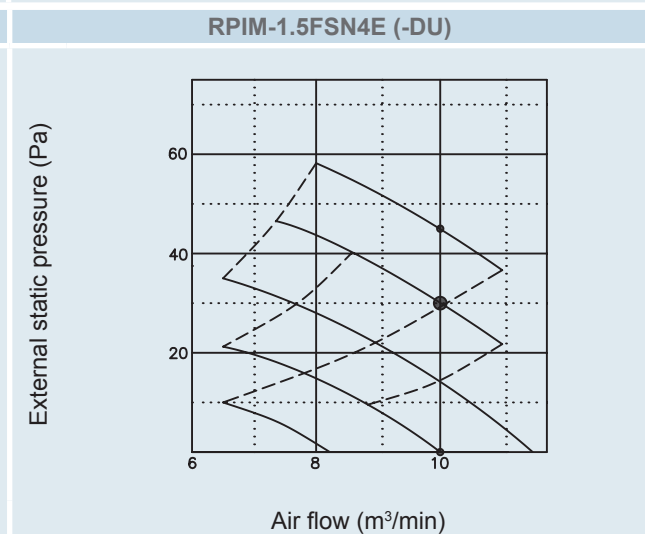
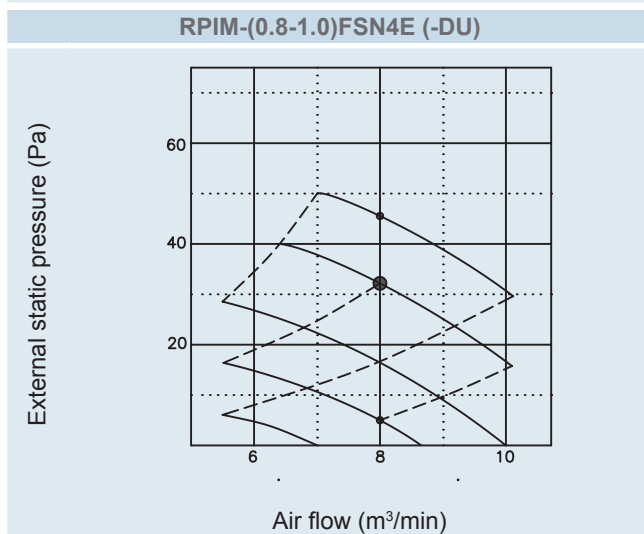
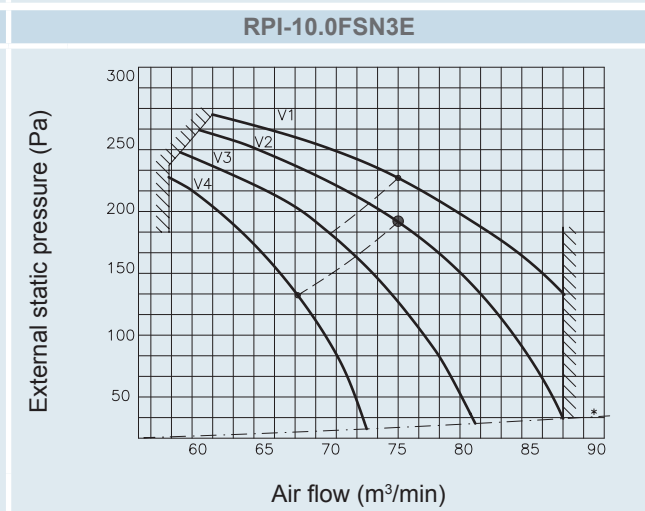
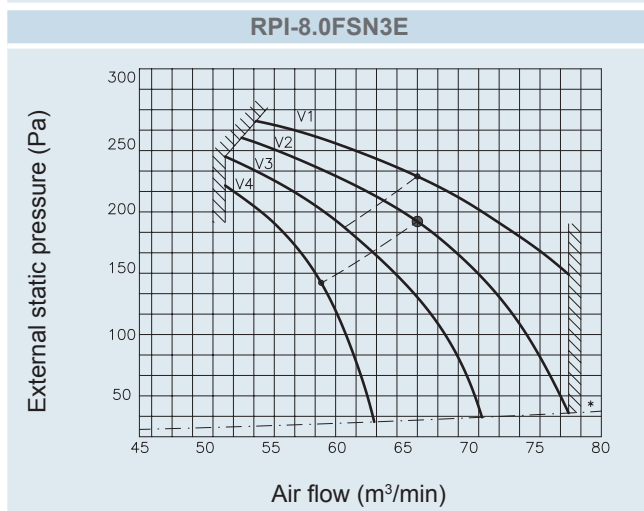
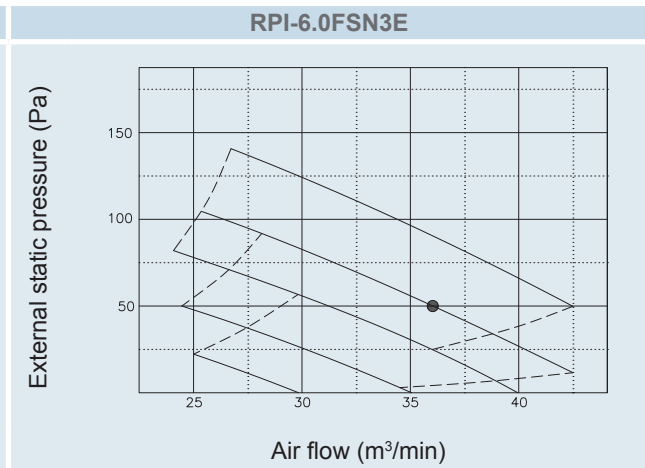
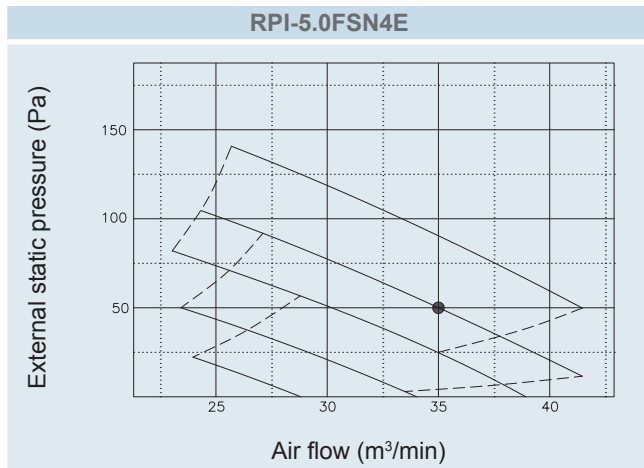
Indoor unit model	Sensible heat factor (SHF)		
	High	Medium	Low
RPI-10.0FSN3E	0.79	0.79	0.72
RPIM-0.8FSN4E(-DU)	0.81	0.69	0.69
RPIM-1.0FSN4E(-DU)	0.81	0.69	0.69
RPIM-1.5FSN4E(-DU)	0.71	0.68	0.64
RPK-0.8FS(H)N3M	0.73	0.72	0.70
RPK-1.0FSN(H)3M	0.73	0.72	0.70
RPK-1.5FSN(H)3M	0.73	0.72	0.70
RPK-2.0FSN3M	0.72	0.71	0.68
RPK-2.5FSN3M	0.75	0.74	0.71
RPK-3.0FSN3M	0.74	0.73	0.70
RPK-4.0FSN3M	0.71	0.70	0.67
RPF(I)-1.0FSN2E	0.73	0.69	0.65
RPF(I)-1.5FSN2E	0.73	0.69	0.65
RPF(I)-2.0FSN2E	0.73	0.69	0.65
RPF(I)-2.5FSN2E	0.73	0.69	0.65

4.5 Fan performance

4.5.1 RPI(M)



4

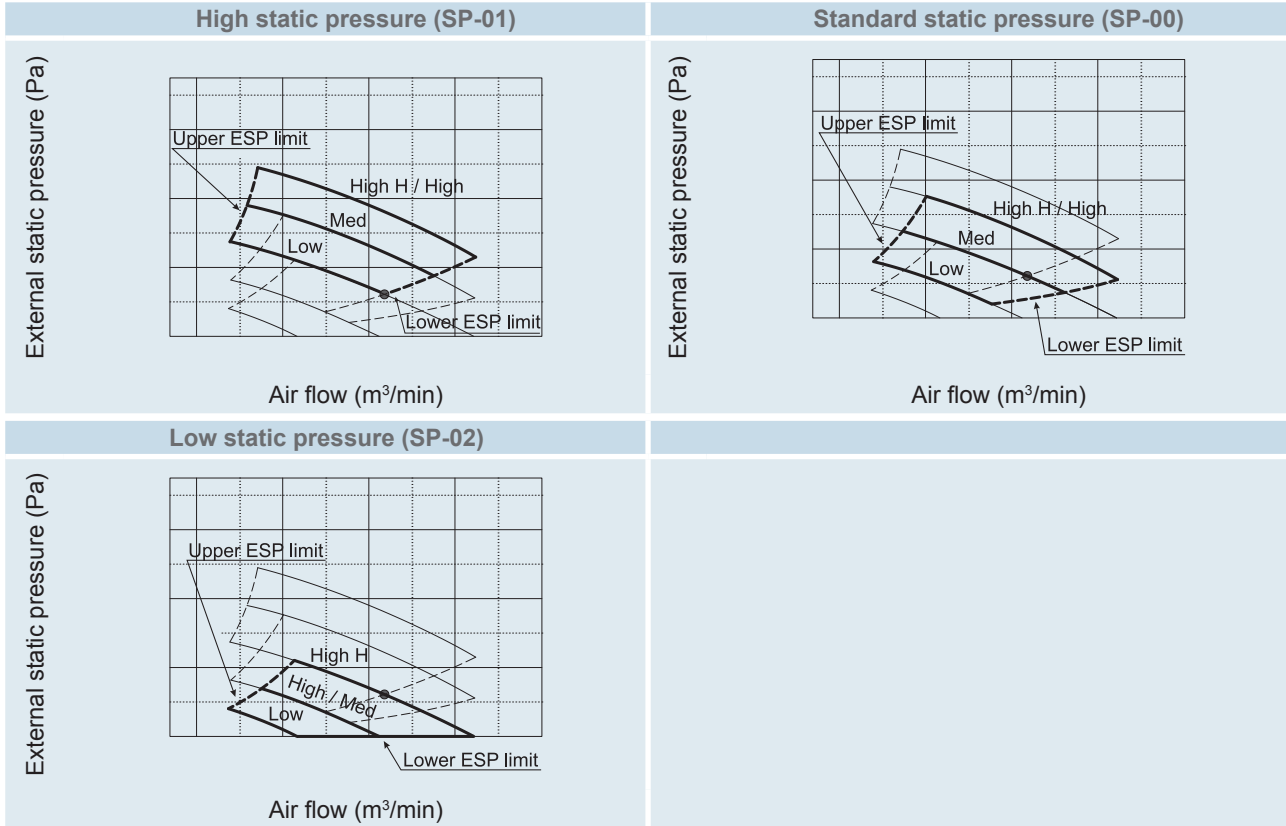


◆ **Meaning of the nominal fan performance values**

◆ **RPI-(0.8-6.0)FSN4E**

Fan speed availability according to the selected external static pressure

According to the selected of External Static Pressure configuration (through the optional function C5) the fan speed available in the Remote Control Switch are the ones show as example in the following pictures.



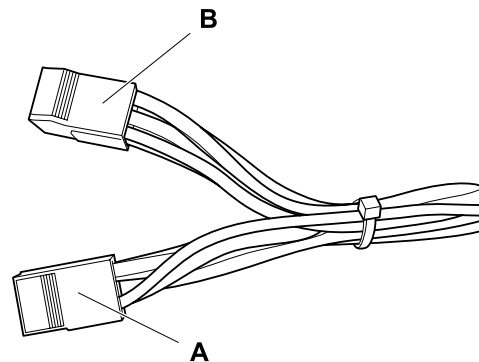
i **NOTE**

- High H" speed available only with PC-ARF remote control switch.
- Factory setting C5 = 00.

◆ **RPI-(8.0/10.0)FSN3E**

The fan motor in RPI-(8.0/10.0)FSN3E units can be configured in two different ways:

- A: connector CN24 LSP (Low Static Pressure); (factory supplied).
- B: connector CN25 HSP (High Static Pressure).



Indoor unit	Static pressure settings	Fan speed (remote control)		
		High	Medium	Low
RPI (8.0/10.0)	HSP	v1	v1	v3
	LSP(*)	v2	v2	v4



NOTE

(•): rated point.

$v_{(1,2,3,4)}$: fan motor speed.

(*): factory-set speed.

HSP: high static pressure.

LSP: low static pressure.



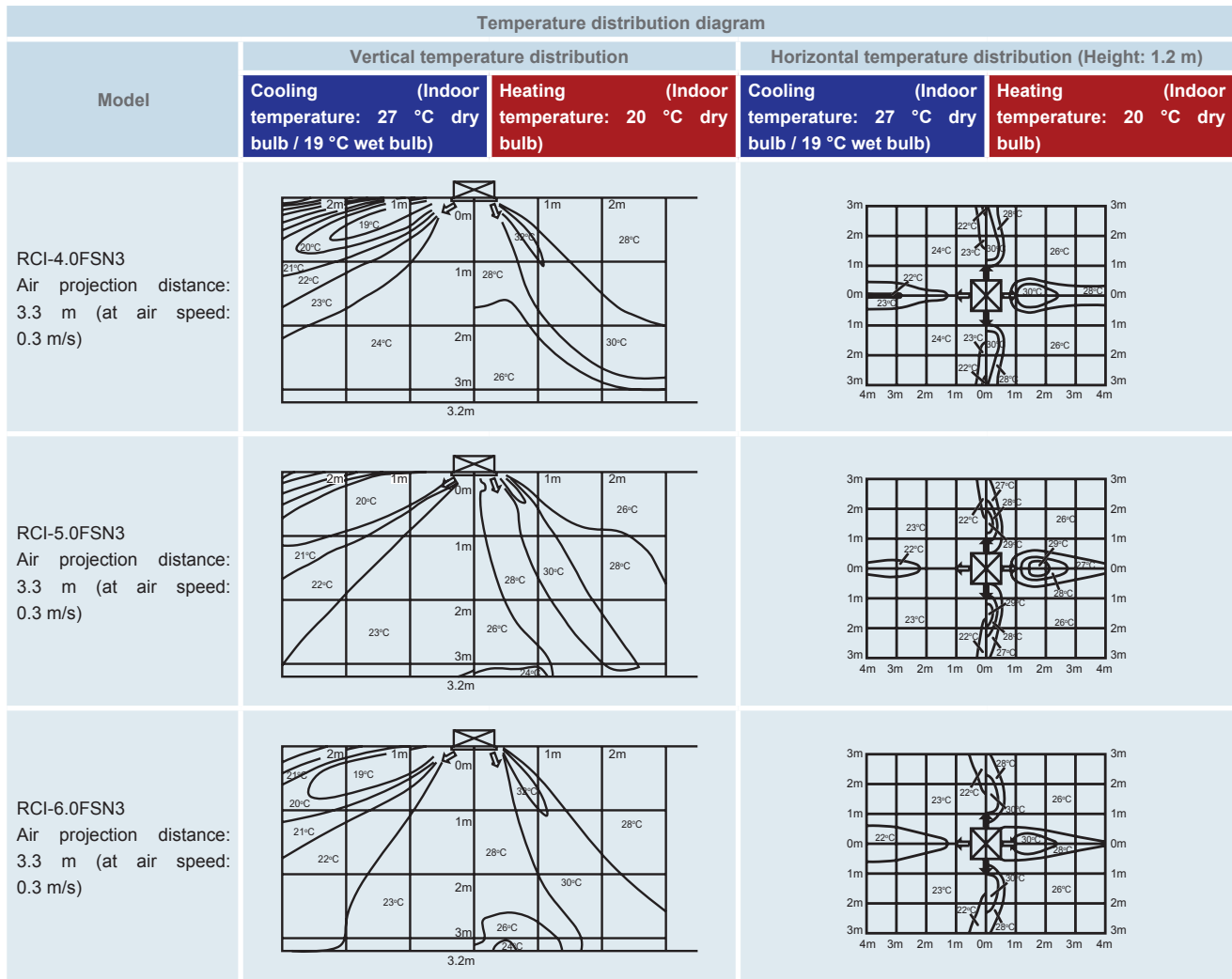
CAUTION

- Make sure SP-02 is selected on the remote control for RPI-(0.8-6.0)FSN4E units in the case of short duct installations. To configure SP-02, consult the optional functions C5->"02", low static pressure option. Make sure the low static pressure option (LSP) is selected for RPI (8.0/10.0)FSN3E units.
- Ensure a minimal resistance is maintained in the duct, as shown in the fan performance graphs. Starting the unit with a duct that is too short causes it to operate outside its accepted operating range.

4.6 Temperature distribution diagrams

4.6.1 RCI-(1.0-6.0)FSN3 - 4-way cassette

Temperature distribution diagram				
Model	Vertical temperature distribution		Horizontal temperature distribution (Height: 1.2 m)	
	Cooling (Indoor temperature: 27 °C dry bulb / 19 °C wet bulb)	Heating (Indoor temperature: 20 °C dry bulb)	Cooling (Indoor temperature: 27 °C dry bulb / 19 °C wet bulb)	Heating (Indoor temperature: 20 °C dry bulb)
RCI-(1.0)FSN3 Air projection distance: 2.7 m (at air speed: 0.3 m/s)				
RCI-(1.5)FSN3 Air projection distance: 2.7 m (at air speed: 0.3 m/s)				
RCI-(2.0)FSN3 Air projection distance: 2.7 m (at air speed: 0.3 m/s)				
RCI-(2.5)FSN3 Air projection distance: 2.7 m (at air speed: 0.3 m/s)				
RCI-(3.0)FSN3 Air projection distance: 3.3 m (at air speed: 0.3 m/s)				



4.6.2 RCI-(1.0-6.0)FSN3Ei - 4-way cassette

Temperature distribution diagram				
Model	Vertical temperature distribution		Horizontal temperature distribution (Height: 1.2 m)	
	Cooling (Indoor temperature: 27 °C dry bulb / 19 °C wet bulb)	Heating (Indoor temperature: 20 °C dry bulb)	Cooling (Indoor temperature: 27 °C dry bulb / 19 °C wet bulb)	Heating (Indoor temperature: 20 °C dry bulb)
RCI-(1.0/1.5)FSN3Ei Air projection distance: 2.7 m (at air speed: 0.3 m/s)				
RCI-2.0FSN3Ei Air projection distance: 2.7 m (at air speed: 0.3 m/s)				
RCI-2.5FSN3Ei Air projection distance: 2.7 m (at air speed: 0.3 m/s)				
RCI-3.0FSN3Ei Air projection distance: 3.3 m (at air speed: 0.3 m/s)				



Temperature distribution diagram						
Model	Vertical temperature distribution			Horizontal temperature distribution (Height: 1.2 m)		
	Cooling temperature: 27 °C dry bulb / 19 °C wet bulb)	(Indoor temperature: 20 °C dry bulb)	Heating temperature: 20 °C dry bulb)	(Indoor temperature: 27 °C dry bulb / 19 °C wet bulb)	Cooling temperature: 27 °C dry bulb / 19 °C wet bulb)	Heating temperature: 20 °C dry bulb)
RCI-4.0FSN3Ei Air projection distance: 3.3 m (at air speed: 0.3 m/s)						
RCI-5.0FSN3Ei Air projection distance: 3.3 m (at air speed: 0.3 m/s)						
RCI-6.0FSN3Ei Air projection distance: 3.3 m (at air speed: 0.3 m/s)						

4.6.3 RCIM (0.8-2.0)FSN2 - 4-way cassette (compact)

Temperature distribution diagram				
Model	Vertical temperature distribution		Horizontal temperature distribution (Height: 1.2 m)	
	Cooling (Indoor temperature: 27 °C dry bulb / 19 °C wet bulb)	Heating (Indoor temperature: 20 °C dry bulb)	Cooling (Indoor temperature: 27 °C dry bulb / 19 °C wet bulb)	Heating (Indoor temperature: 20 °C dry bulb)
<p>RCIM-0.8FSN2</p> <p>Air projection distance: 2.5 m (at air speed: 0.3 m/s)</p>				
<p>RCIM-1.0FSN2</p> <p>Air projection distance: 2.5 m (at air speed: 0.3 m/s)</p>				
<p>RCIM-1.5FSN2</p> <p>Air projection distance: 2.5 m (at air speed: 0.3 m/s)</p>				
<p>RCIM-2.0FSN2</p> <p>Air projection distance: 2.7 m (at air speed: 0.3 m/s)</p>				



4.6.4 RCD-(1.0-5.0)FSN2 - 2-way cassette

Temperature distribution diagram				
Model	Vertical temperature distribution		Horizontal temperature distribution (Height: 1.2 m)	
	Cooling (Indoor temperature: 27 °C dry bulb / 19 °C wet bulb)	Heating (Indoor temperature: 20 °C dry bulb)	Cooling (Indoor temperature: 27 °C dry bulb / 19 °C wet bulb)	Heating (Indoor temperature: 20 °C dry bulb)
RCD-(1.0/1.5)FSN2 Air projection distance: 2.5 m (at air speed: 0.3 m/s)				
RCD-2.0FSN2 Air projection distance: 2.5 m (at air speed: 0.3 m/s)				
RCD-(2.5/3.0)FSN2 Air projection distance: 2.7 m (at air speed: 0.3 m/s)				
RCD-4.0FSN2 Air projection distance: 2.7 m (at air speed: 0.3 m/s)				
RCD-5.0FSN2 Air projection distance: 3.0 m (at air speed: 0.3 m/s)				

4.6.5 RPC-(2.0-6.0)FSN2E - Ceiling type

Temperature distribution diagram		
Model	Vertical temperature distribution	Horizontal temperature distribution (Height: 1.2 m)
	Cooling (Indoor temperature: 27 °C dry bulb / 19 °C wet bulb)	Heating (Indoor temperature: 20 °C dry bulb)
RPC-(2.0/2.5)FSN2E Air projection distance: 4.9 m (at air speed: 0.3 m/s)		
RPC-(3.0/4.0)FSN2E Air projection distance: 6.9 m (at air speed: 0.3 m/s)		
RPC-(5.0/6.0)FSN2E Air projection distance: 7.5 m (at air speed: 0.3 m/s)		



4.6.6 RPK-(0.8-4.0)FSN(H)3M - Wall type

Temperature distribution diagram		
Model	Vertical temperature distribution	Horizontal temperature distribution (Height: 1.2 m)
	Cooling (Indoor temperature: 27 °C dry bulb / 19 °C wet bulb)	Heating (Indoor temperature: 20 °C dry bulb)
RPK-0.8FSN(H)3M Air projection distance: 4.3 m (at air speed: 0.3 m/s)		
RPK-1.0FSN(H)3M Air projection distance: 4.3 m (at air speed: 0.3 m/s)		
RPK-1.5FSN(H)3M Air projection distance: 4.4 m (at air speed: 0.3 m/s)		
RPK-2.0FSN3M Air projection distance: 4.4 m (at air speed: 0.3 m/s)		
RPK-2.5FSN3M Air projection distance: 4.5 m (at air speed: 0.3 m/s)		
RPK-3.0FSN3M Air projection distance: 5.2 m (at air speed: 0.3 m/s)		
RPK-4.0FSN3M Air projection distance: 6.2 m (at air speed: 0.3 m/s)		



NOTE

- The air is discharged almost symmetrically.
- The illustrations show obstacle-free air distribution.
- This note is valid for all indoor units shown in this chapter.

4.7 Compatibility

H-LINK and H-LINK II communication networks are combined with their remote controls in line with the following examples.

- The new H-LINK II communication network system provides for remote control connection, from the PC-P2HTE model.
- HITACHI has a range of individual, centralised or computer-aided remote control systems that can be used with the System Free units. Consult the corresponding Technical Catalogue for controls.



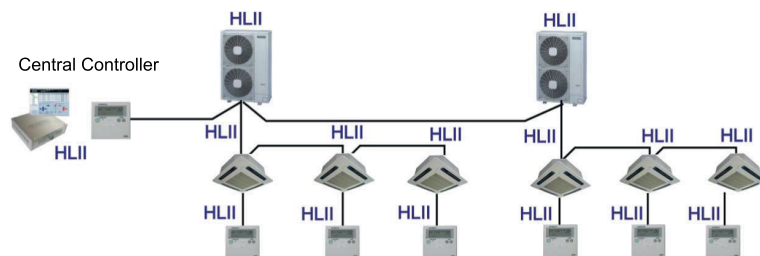
NOTE

Several functions are not available in certain Indoor Unit / Remote Control combinations.

Refer to Remote Control Installation and Operation Manual and Controllers Technical Catalogue for detailed functions.

4.7.1 Examples of different H-LINK and H-LINK II systems

Example 1. System with outdoor and indoor units. remote control and H-LINK II communication network

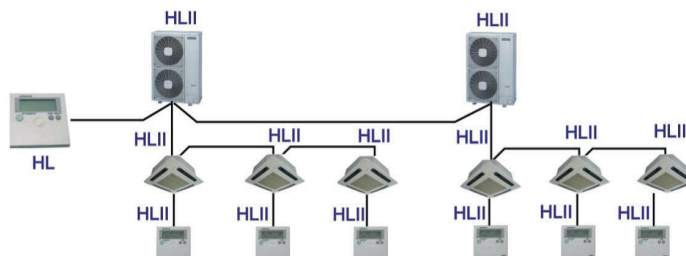


i NOTE

HLII: H-LINK II.

Refrigerant cycle number range	0-63
Indoor unit number range	0-63
Maximum number of indoor units	160
Maximum number of units (*)	200
(*) Units = indoor units + outdoor units + centralised control.	

Example 2. System with outdoor and indoor units. H-LINK II remote control and H-LINK central control

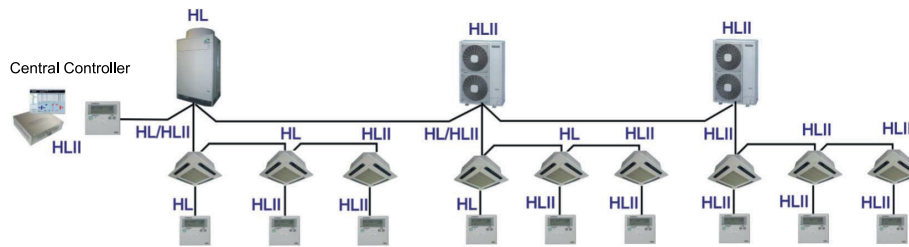


i NOTE

- HL: H-LINK.
- HLII: H-LINK II.

Refrigerant cycle number range	0-15
Indoor unit number range	0-15
Maximum number of indoor units	128
Maximum number of units (*)	145
(*) Units = indoor units + outdoor units + centralised control.	

Example 3. System with outdoor and indoor units, H-LINK remote controls and H-LINK II central control



Combination of units	1	2		3
Refrigerant cycle number range	0-15	0-15		0-63
Indoor unit number range	0-15	0-15	0-63	0-63
Maximum number of indoor units	128			
Maximum number of units (*)	145			

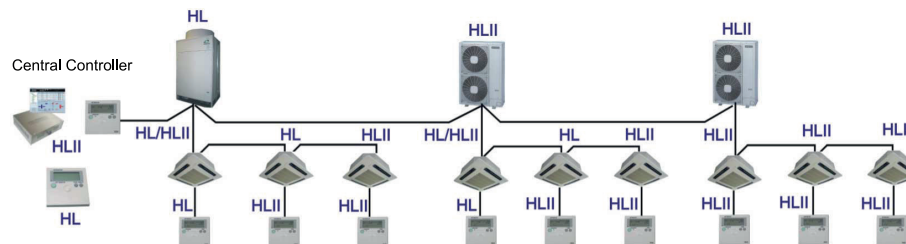
(*) Units = indoor units + outdoor units + centralised control.

i NOTE

- HL: H-LINK
- HLII: H-LINK II



Example 4. System with outdoor and indoor units, H-LINK and H-LINK II remote controls and H-LINK central control



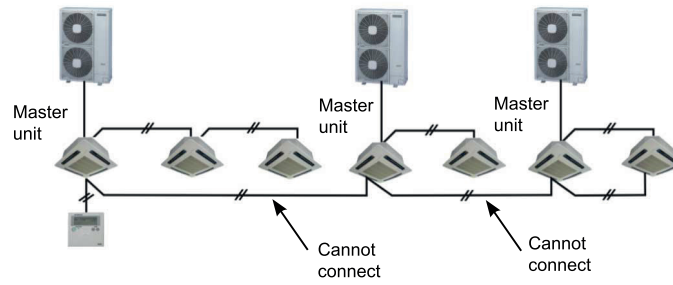
i NOTE

- HL: H-LINK
- HLII: H-LINK II

Refrigerant cycle number range	0-15
Indoor unit number range	0-15
Maximum number of indoor units	128
Maximum number of units (*)	145

(*) Units = indoor units + outdoor units + centralised control.

The following connections are not possible:



Different indoor units from different systems cannot be connected using the same remote control when the option to not use the remote control operating cable has been selected.

All optional units connected to CN3 may only be used on the main unit using the connected remote control.

5. Acoustic characteristic curves

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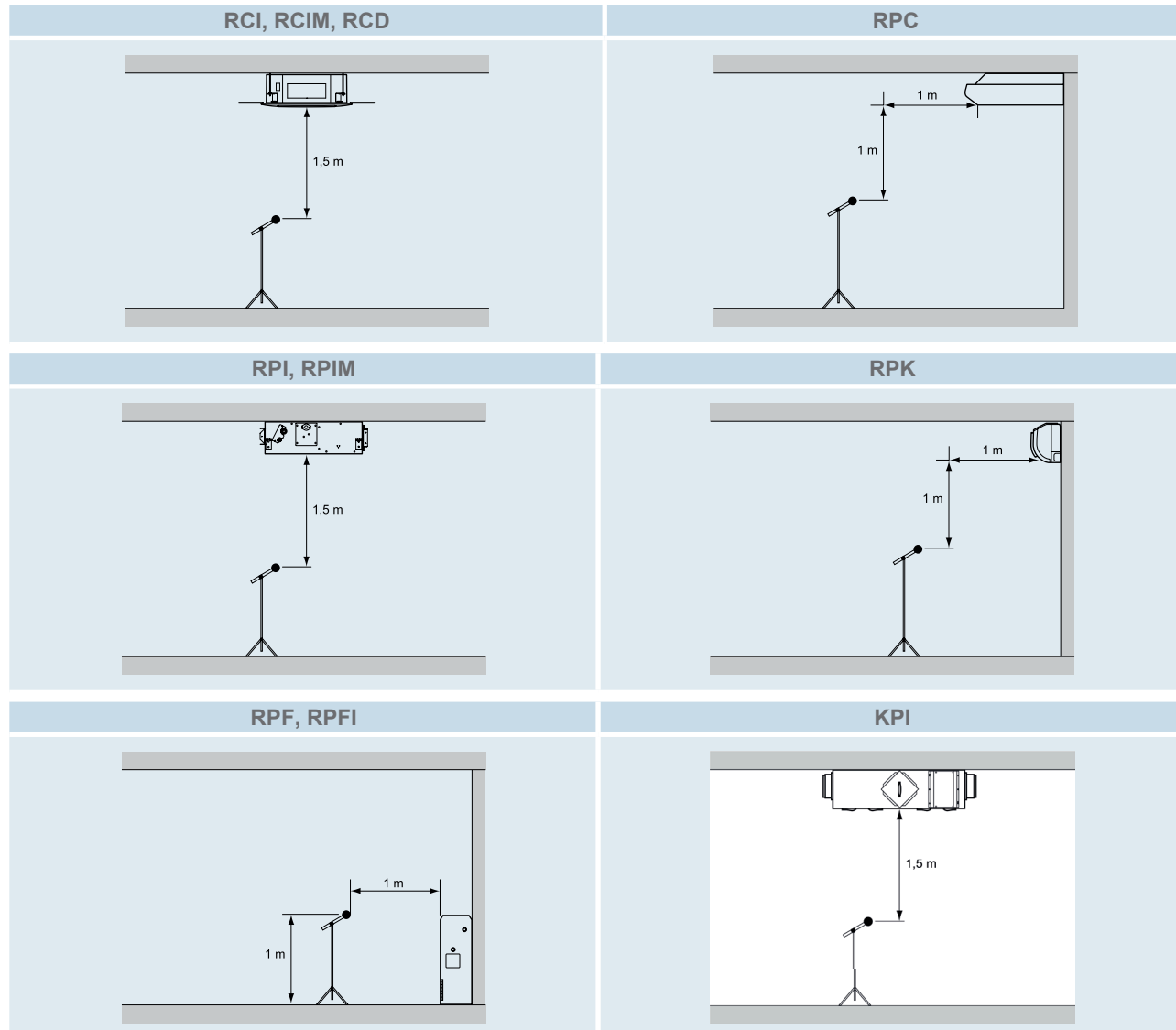
5

5.1 Sound pressure level

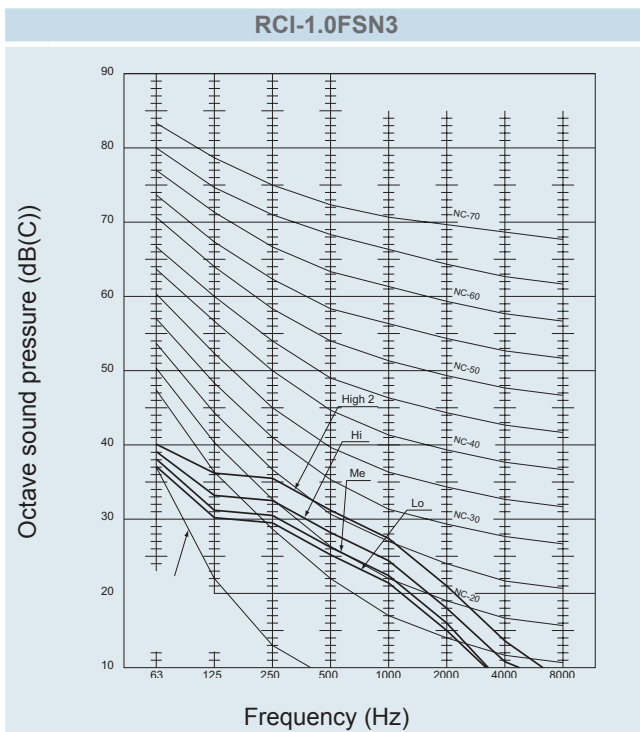
The sound pressure level has been measured in an anechoic chamber under the following conditions:

- 1 Distance of the unit from the measuring point:
 - a. RCI, RCIM, RCD, RPI and RPIM indoor units: 1.5 m below the unit.
 - b. RPC and RPK indoor units: 1 m below the unit, 1 m from the discharge louver.
 - c. RPF and RPF1 indoor units: 1 m from floor level, 1 m from the front surface of the unit.
 - d. Additional KPI system: 1.5 m below the unit (with no ceiling below the unit), duct sound insulated.
- 2 Power supply: 230V 50Hz.

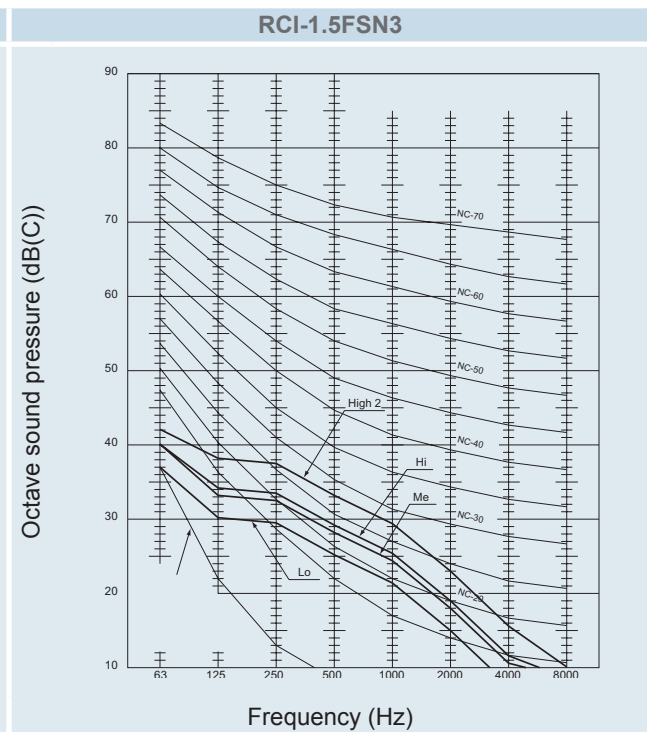
Sound pressure level measuring positions



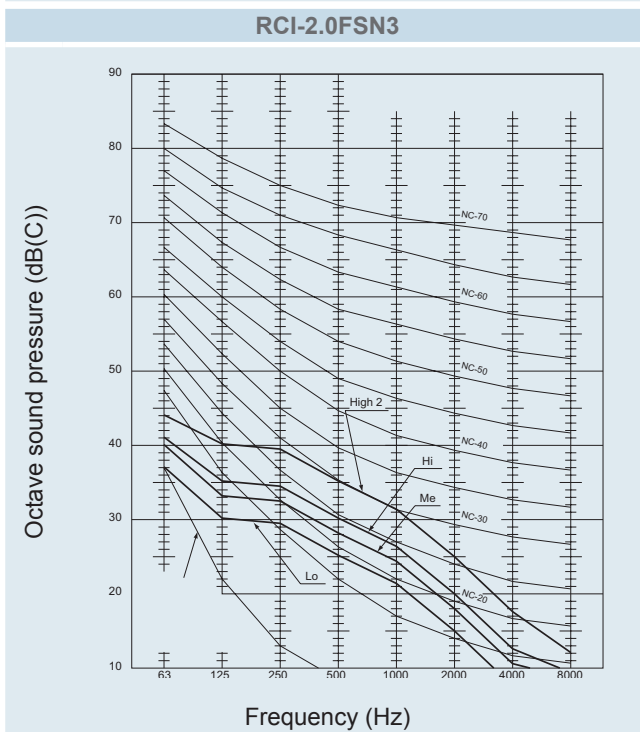
5.2 RCI-(1.0-6.0)FSN3 - 4-way cassette



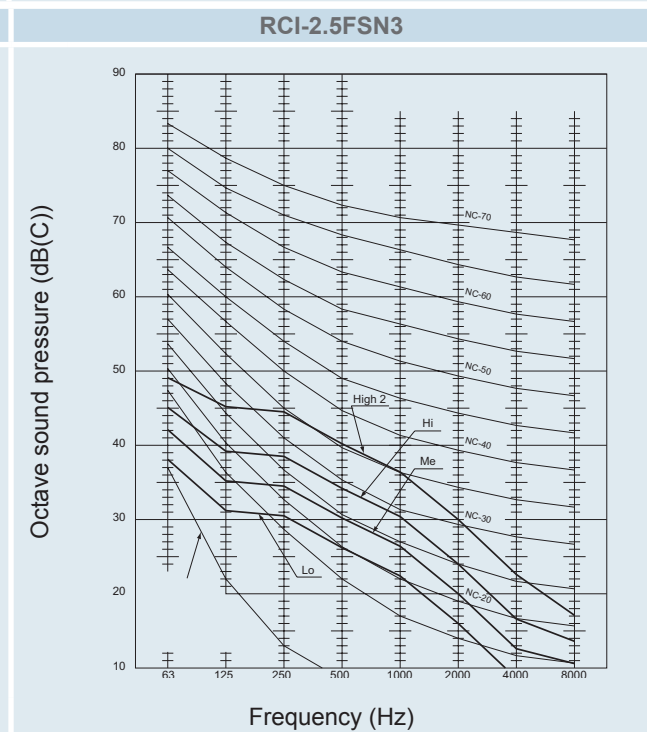
Fan motor speed: HighH/high/med/low: 33/30/28/27 dB(A)



Fan motor speed: HighH/high/med/low: 35/31/30/27 dB(A)

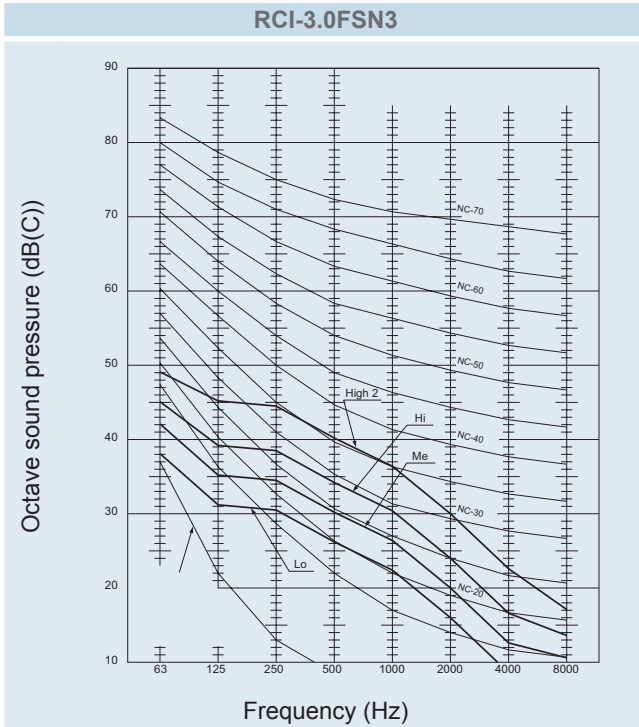


Fan motor speed: HighH/high/med/low: 37/32/30/27 dB(A)

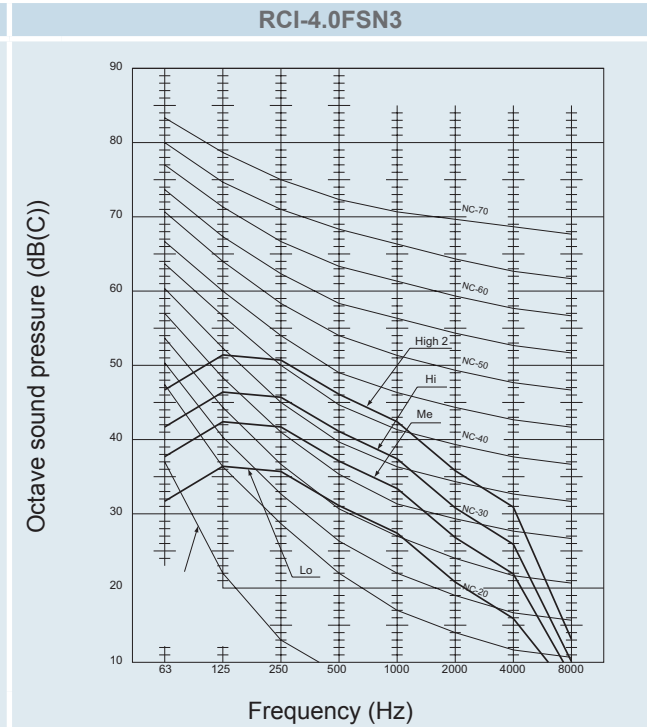


Fan motor speed: HighH/high/med/low: 42/36/32/28 dB(A)

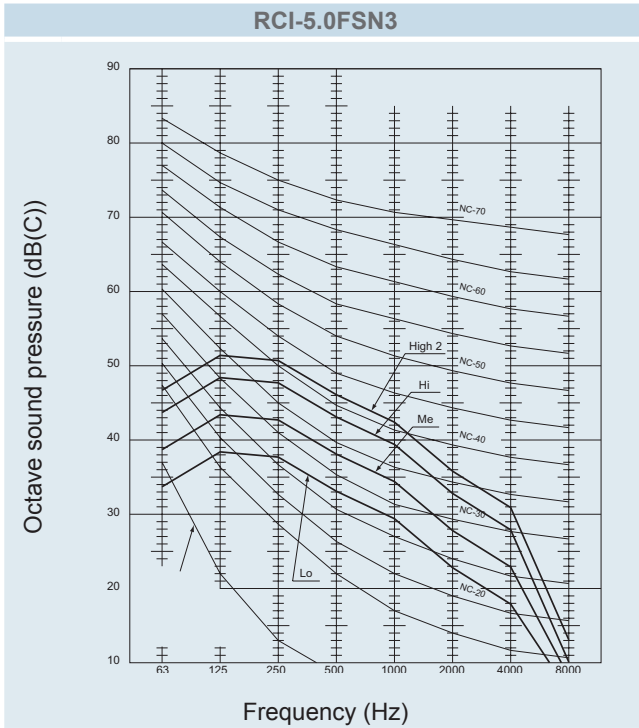




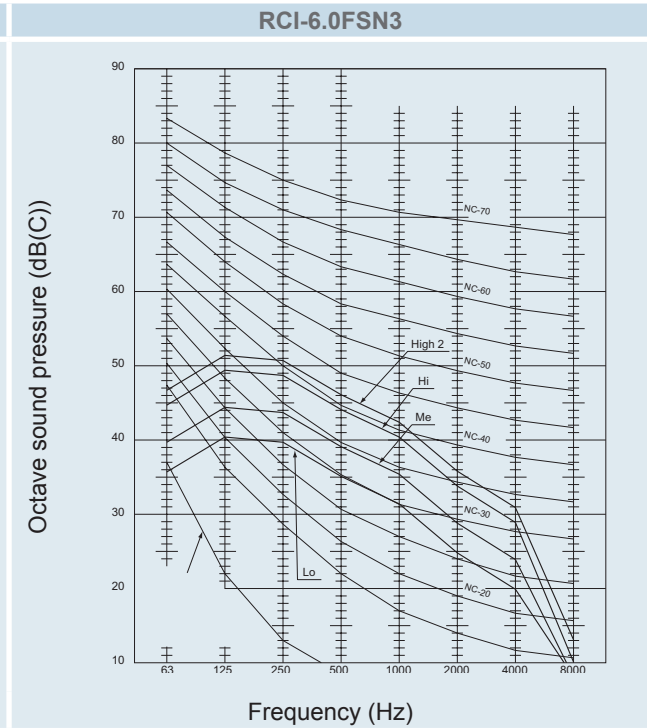
Fan motor speed: HighH/high/med/low: 42/36/32/28 dB(A)



Fan motor speed: HighH/high/med/low: 48/43/39/33 dB(A)

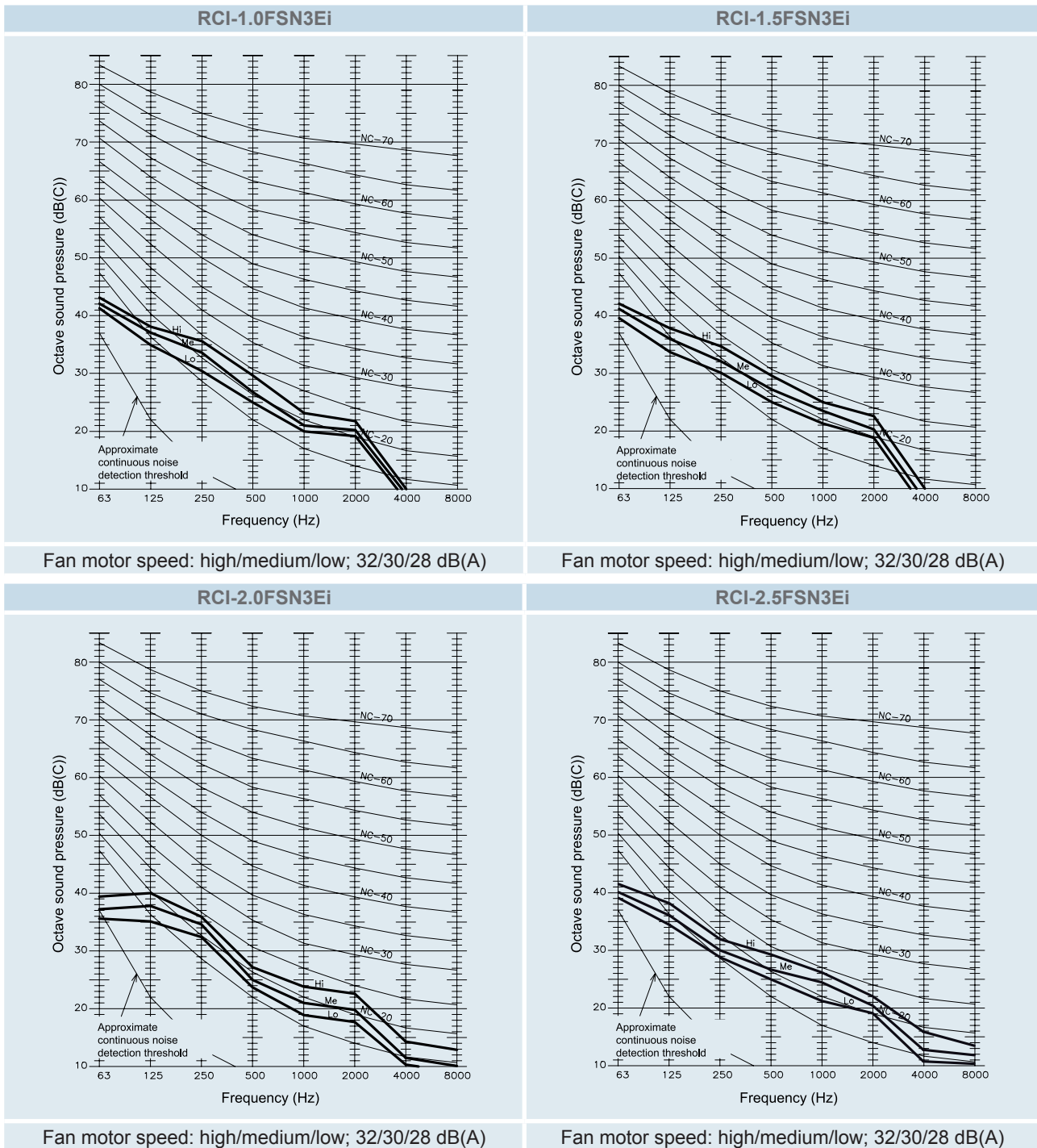


Fan motor speed: HighH/high/med/low: 48/45/40/35 dB(A)

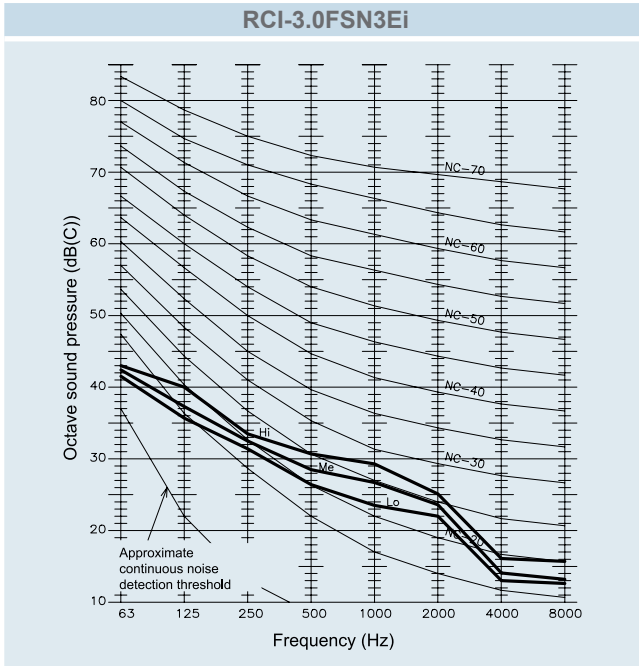


Fan motor speed: HighH/high/med/low: 48/46/41/37 dB(A)

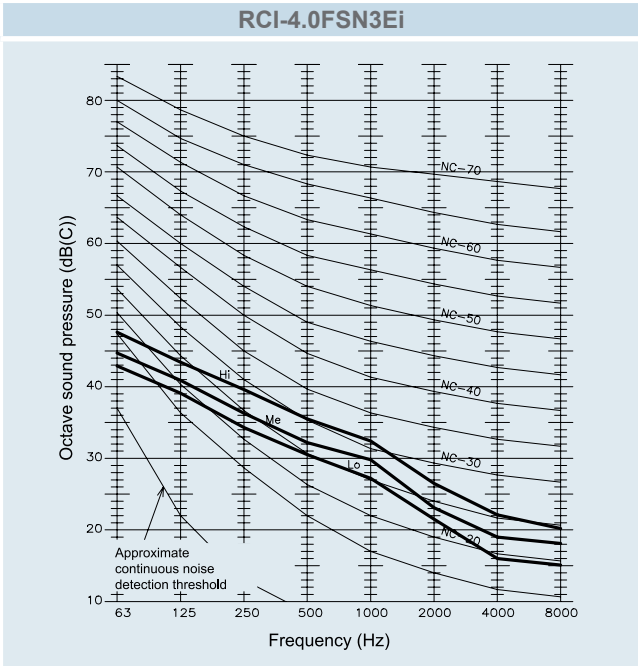
5.3 RCI-(1.0-6.0)FSN3Ei - 4-way cassette



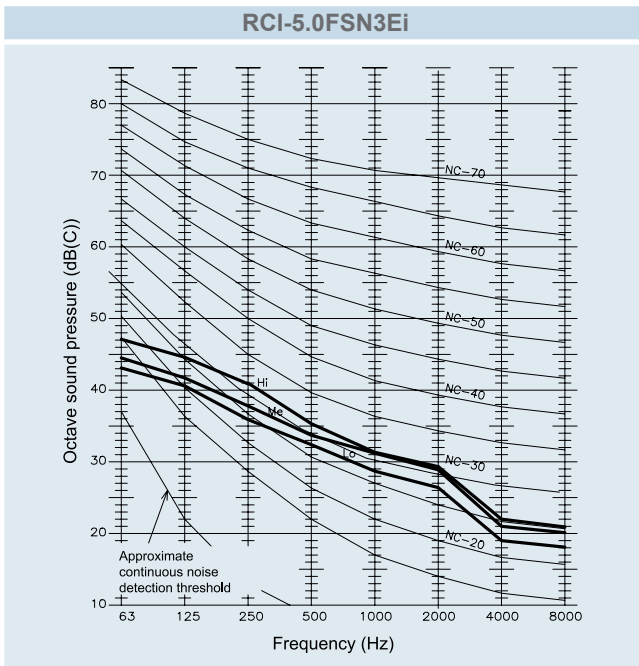
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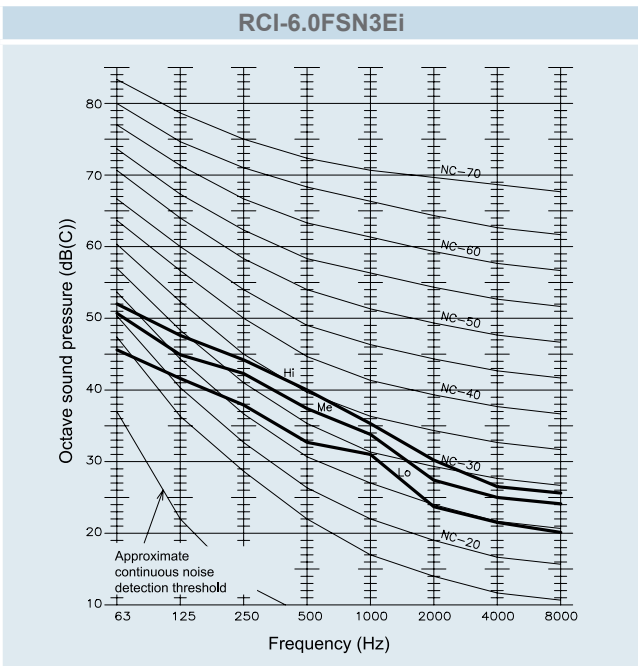
Fan motor speed: high/medium/low; 34/32/30 dB(A)



Fan motor speed: high/medium/low; 38/35/33 dB(A)

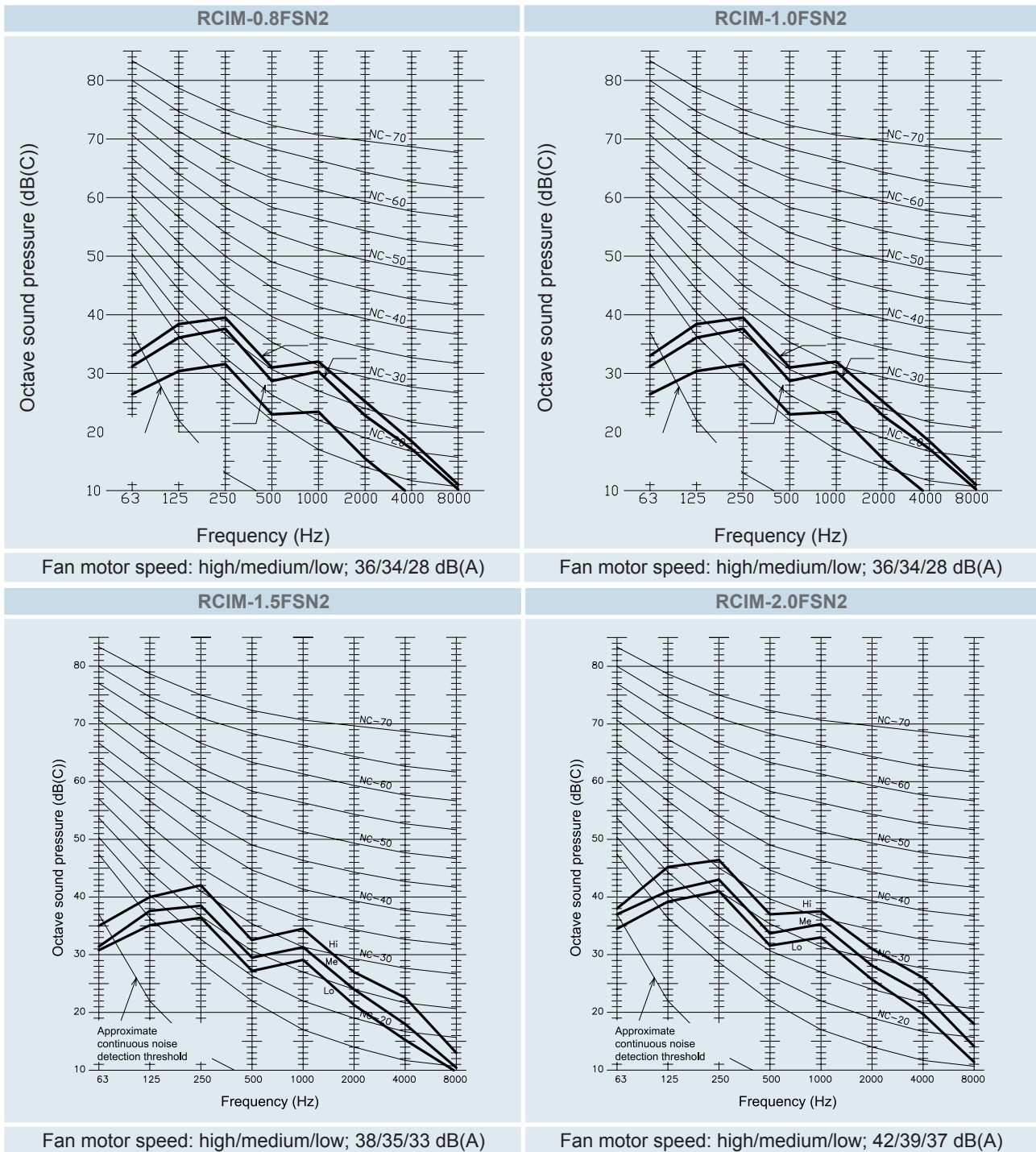


Fan motor speed: high/medium/low; 39/37/35 dB(A)



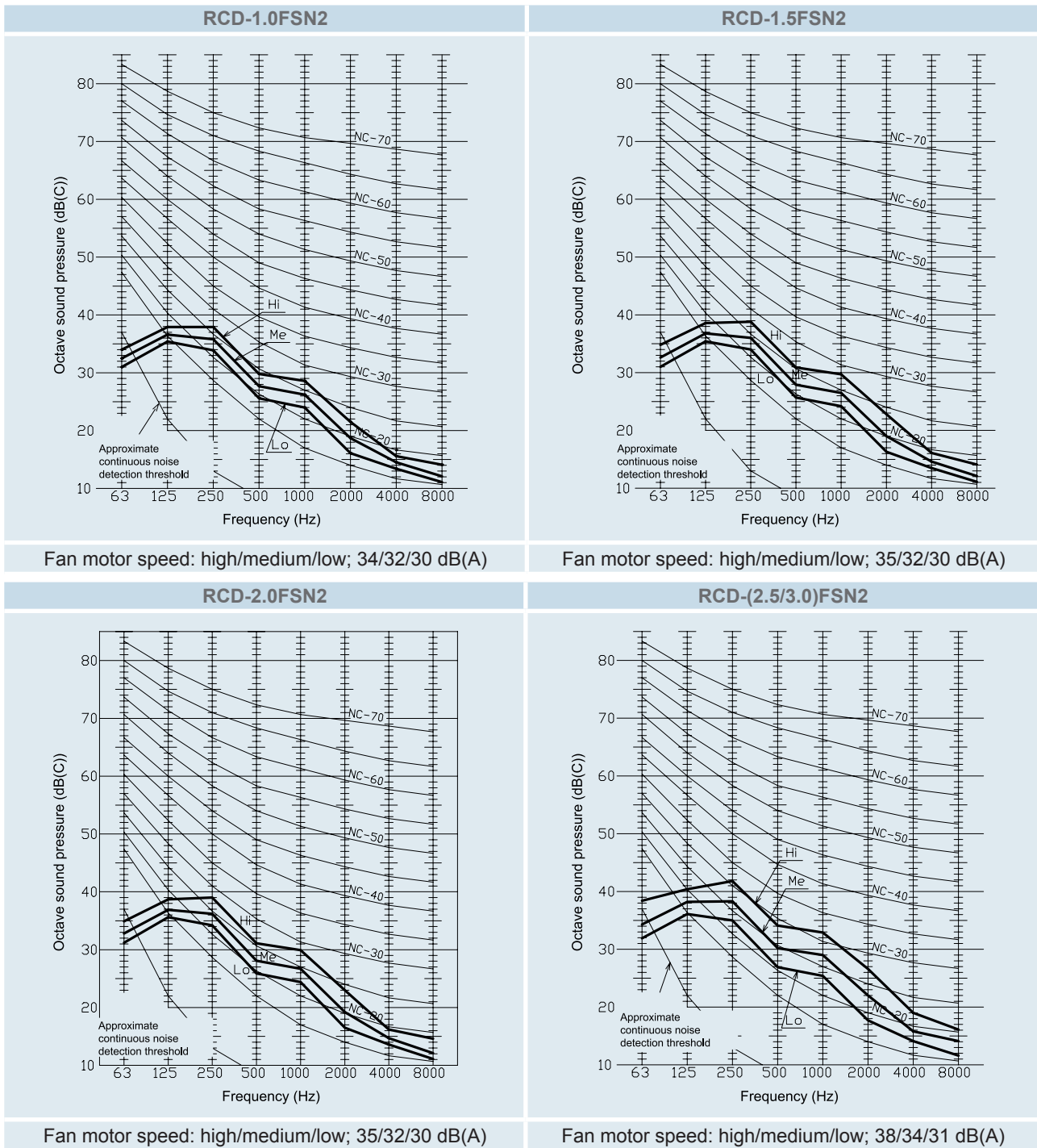
Fan motor speed: high/medium/low; 42/40/36 dB(A)

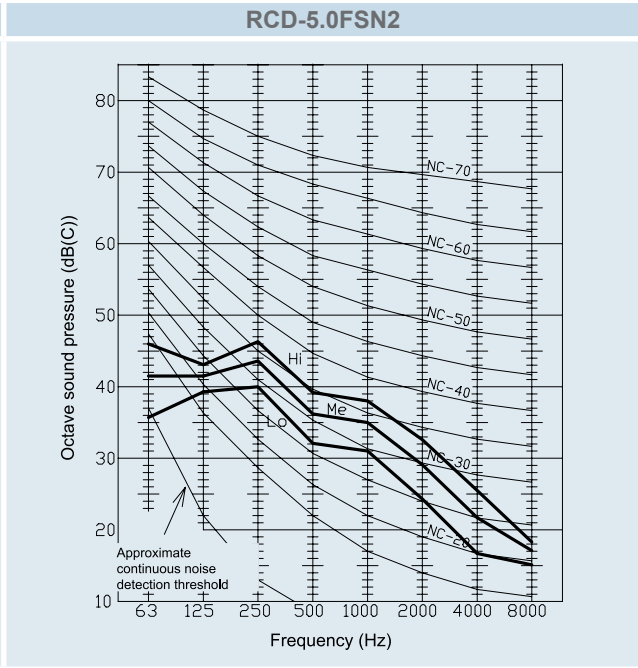
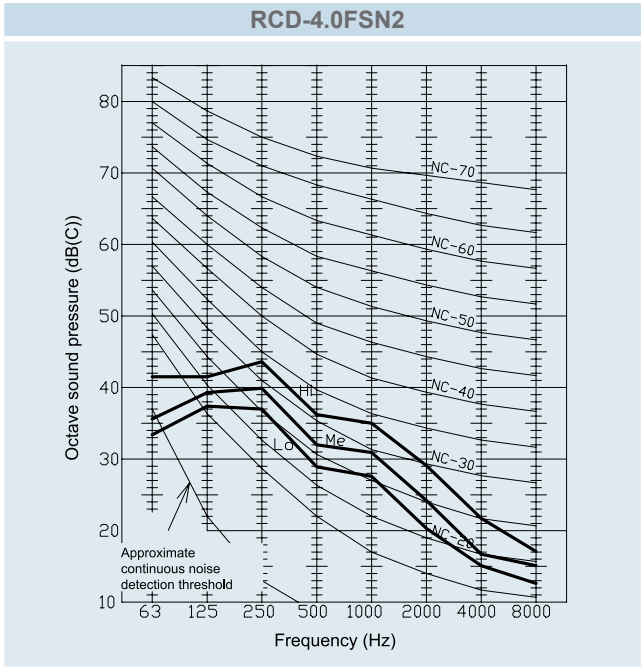
5.4 RCIM-(0.8-2.0)FSN2 - 4-way cassette (compact)



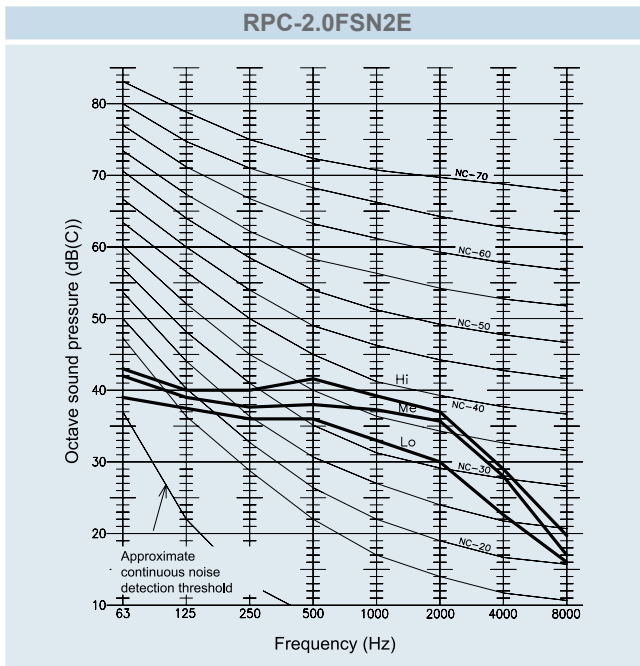
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5.5 RCD-(1.0-5.0)FSN2 - 2-way cassette

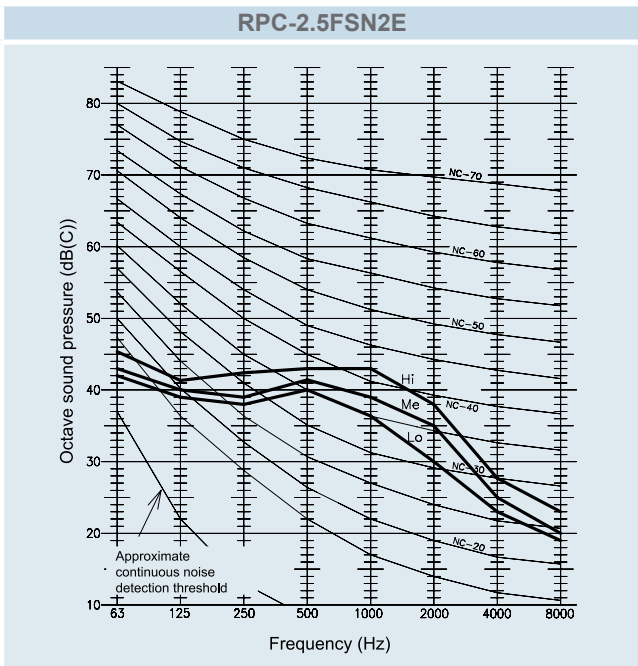




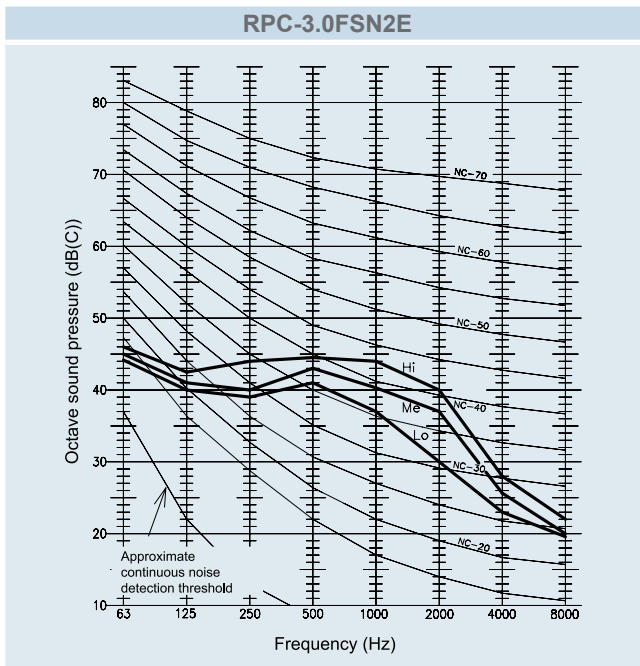
5.6 RPC-(2.0-6.0)FSN2E - Ceiling type



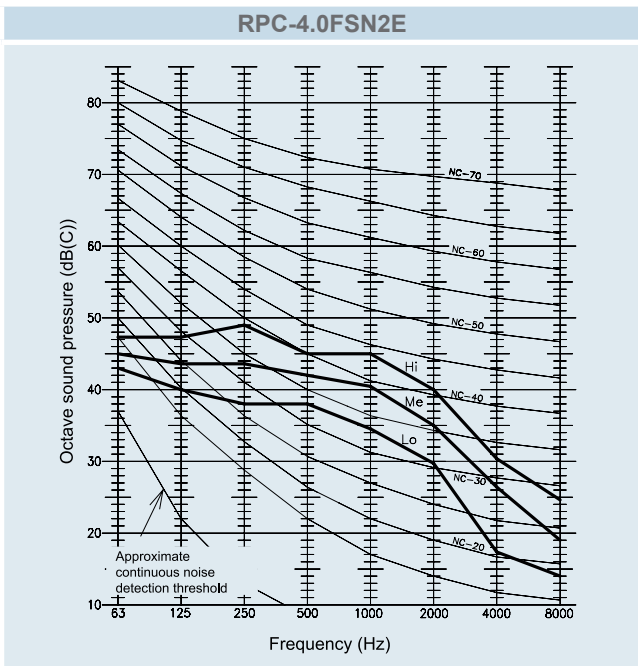
Fan motor speed: high/medium/low; 44/42/38 dB(A)



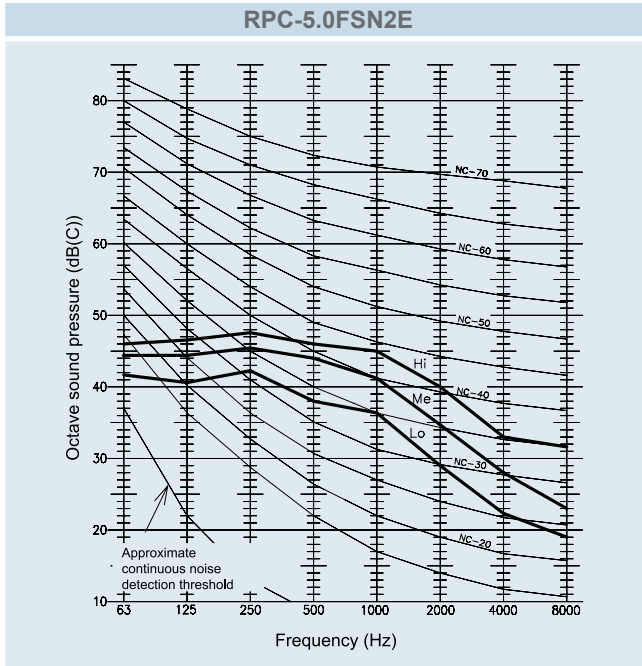
Fan motor speed: high/medium/low; 46/43/41 dB(A)



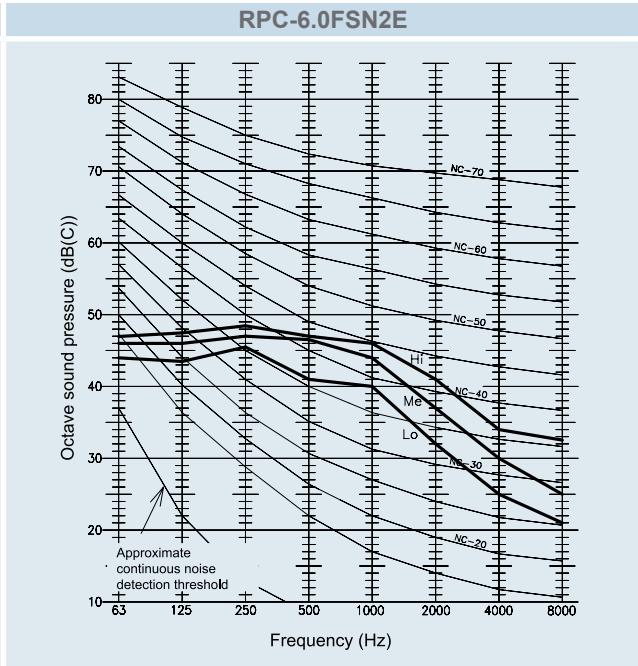
Fan motor speed: high/medium/low; 48/45/42 dB(A)



Fan motor speed: high/medium/low; 49/45/39 dB(A)



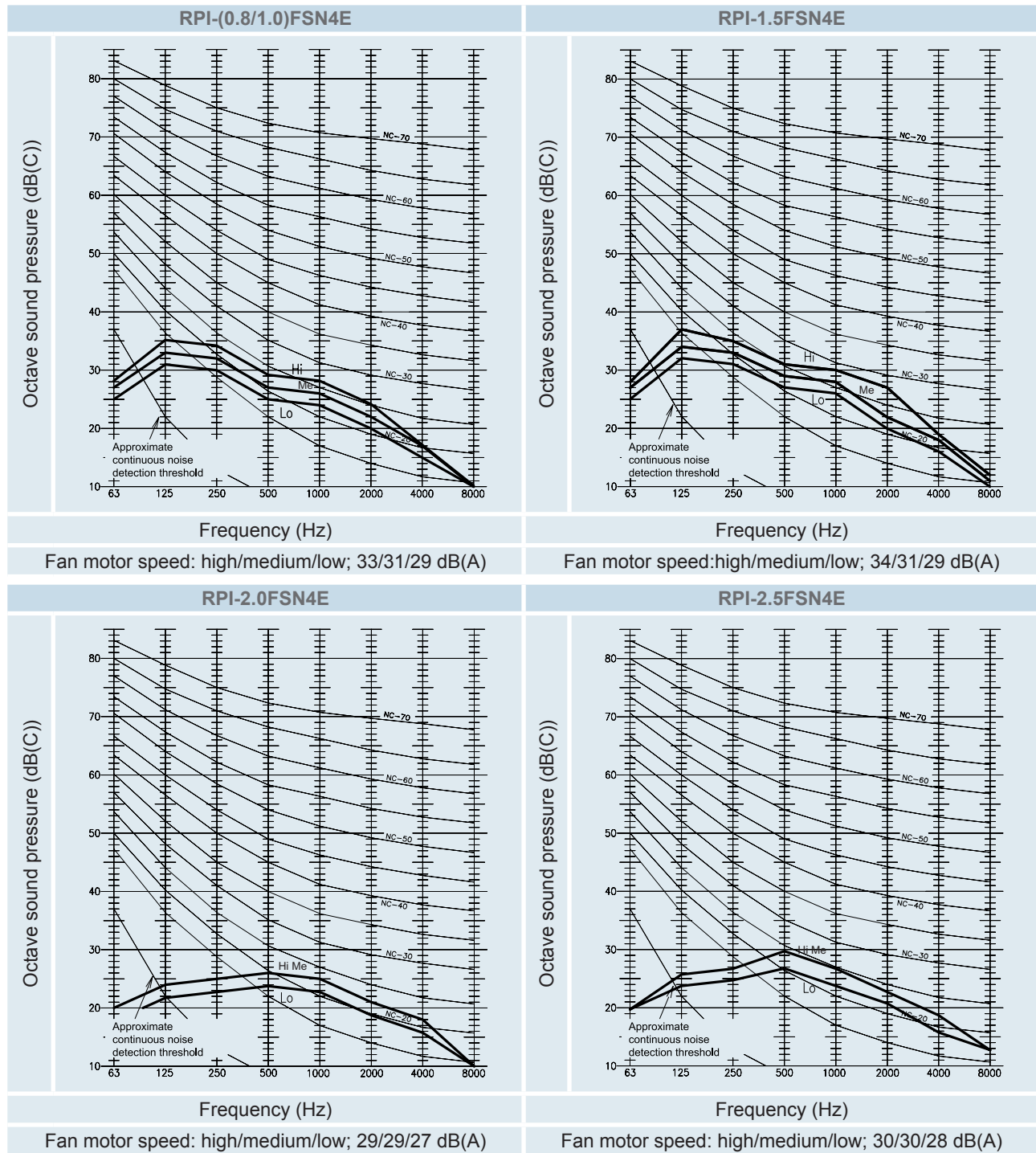
Fan motor speed: high/medium/low; 49/46/41 dB(A)

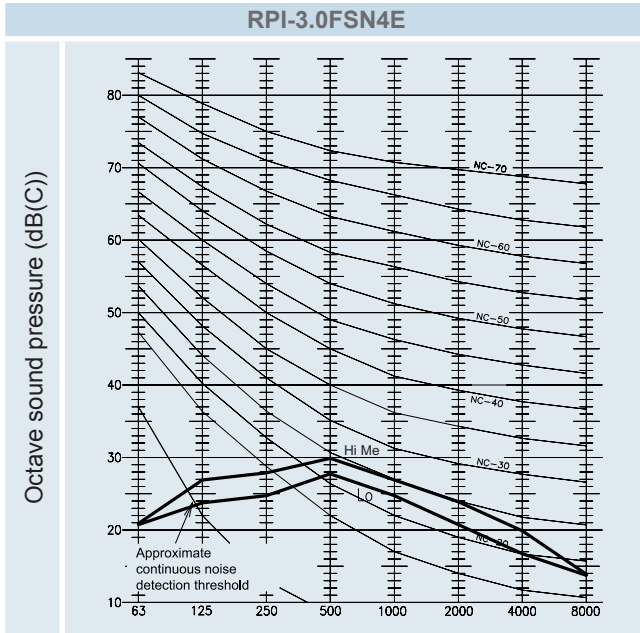


Fan motor speed: high/medium/low; 50/48/44 dB(A)



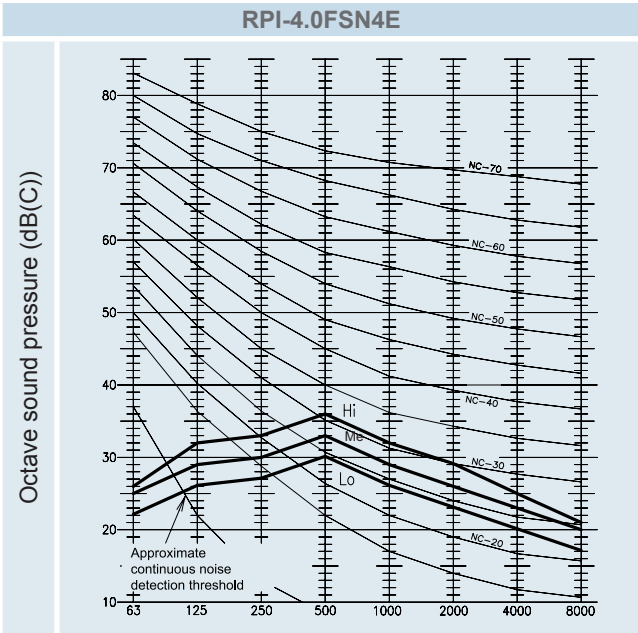
5.7 RPI-(0.8-10.0)FSN(3/4)E - Indoor ducted unit





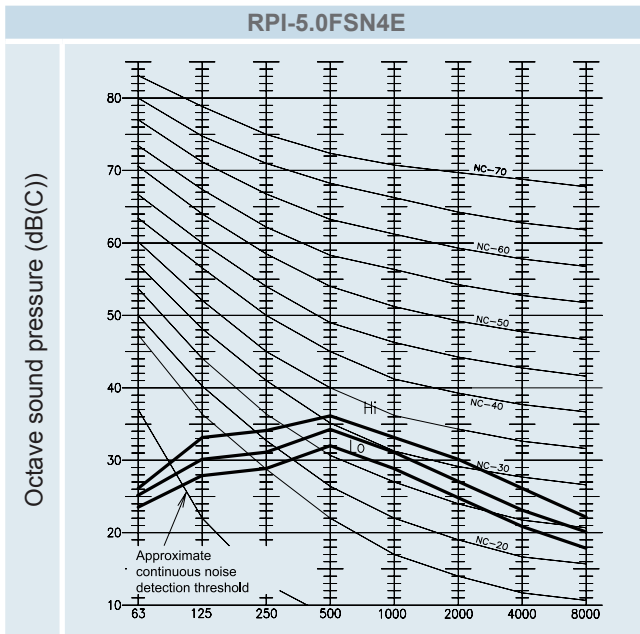
Frequency (Hz)

Fan motor speed: high/medium/low; 31/31/29 dB(A)



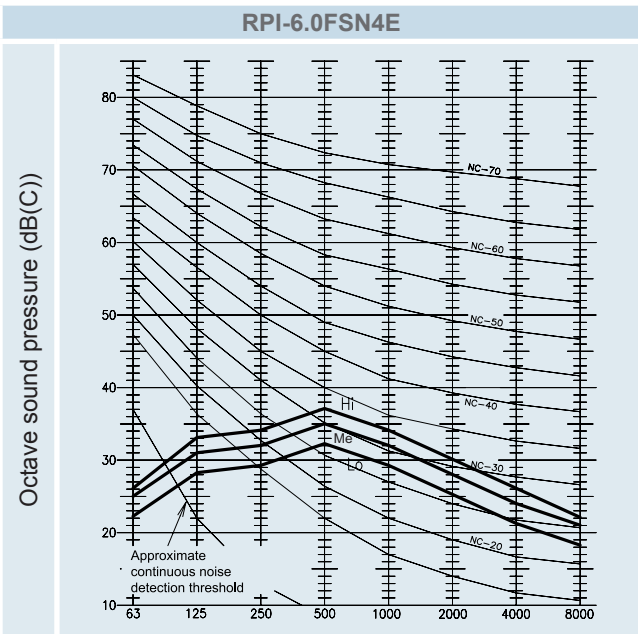
Frequency (Hz)

Fan motor speed: high/low; high/medium/low (SP-00) dB(A)



Frequency (Hz)

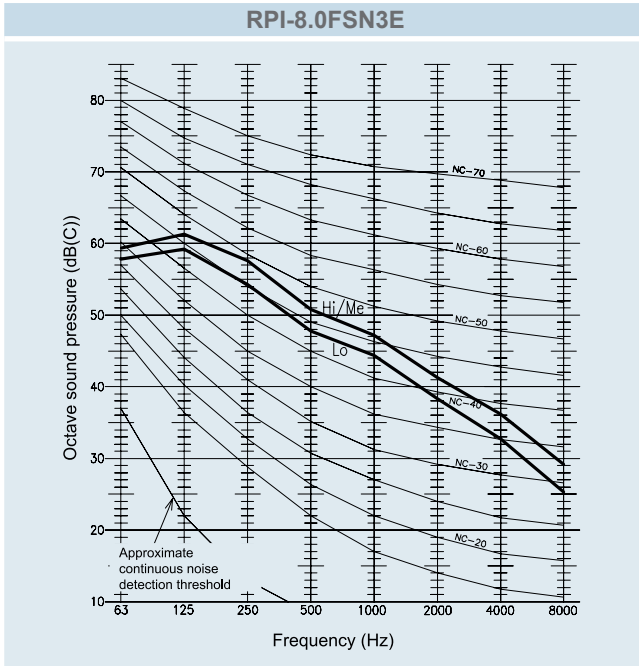
Fan motor speed: high/medium/low; 38/35/33 (SP-00) dB(A)



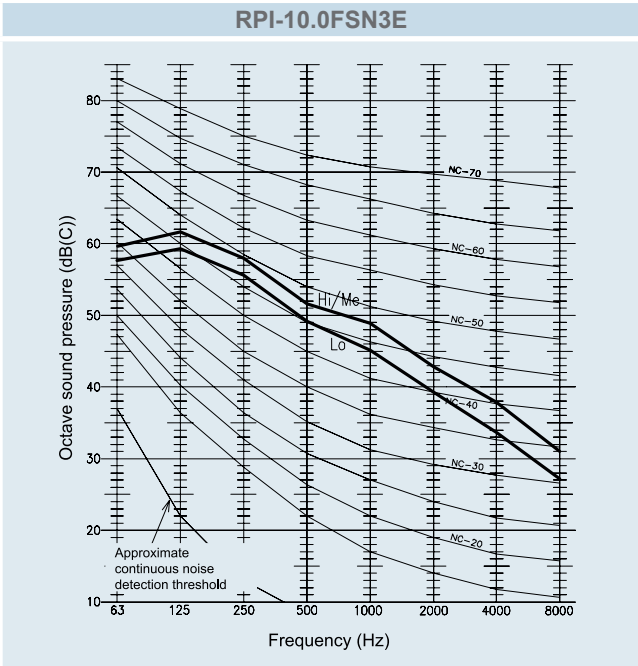
Frequency (Hz)

Fan motor speed: high/medium/low; 39/36/33 (SP-01) dB(A)

5

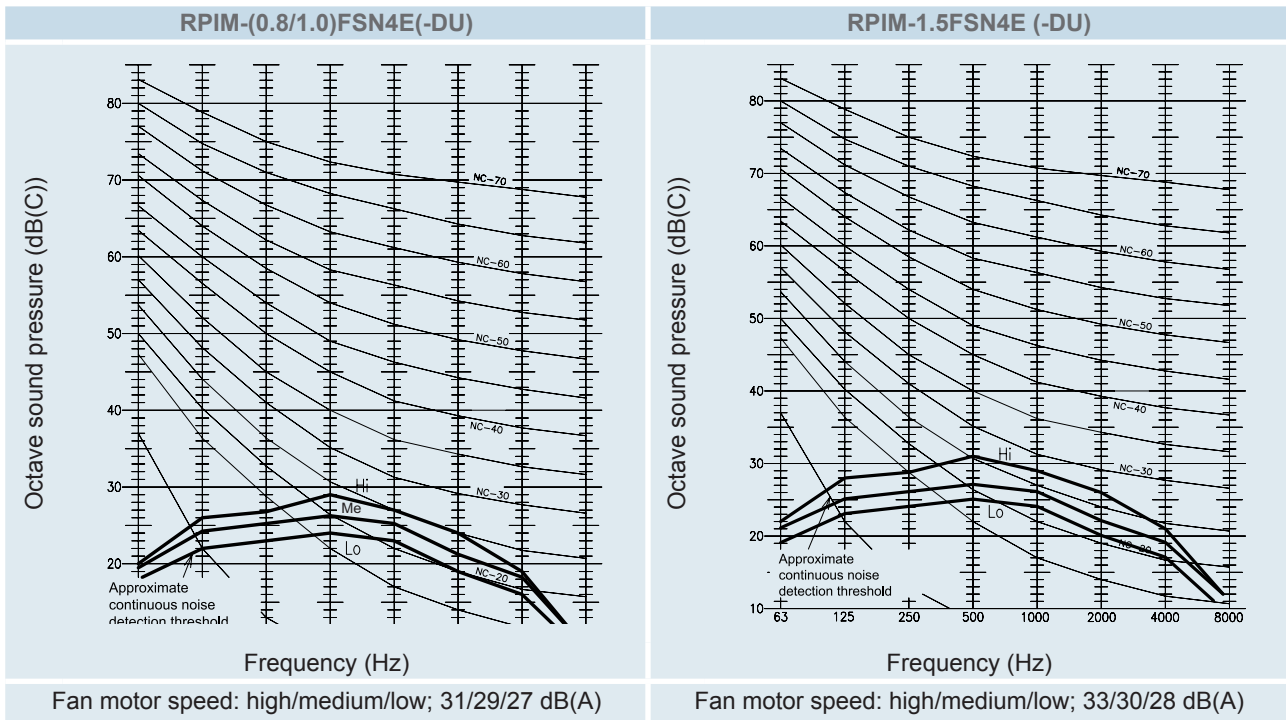


Fan motor speed: high/medium/low; 54/54/51 dB(A)

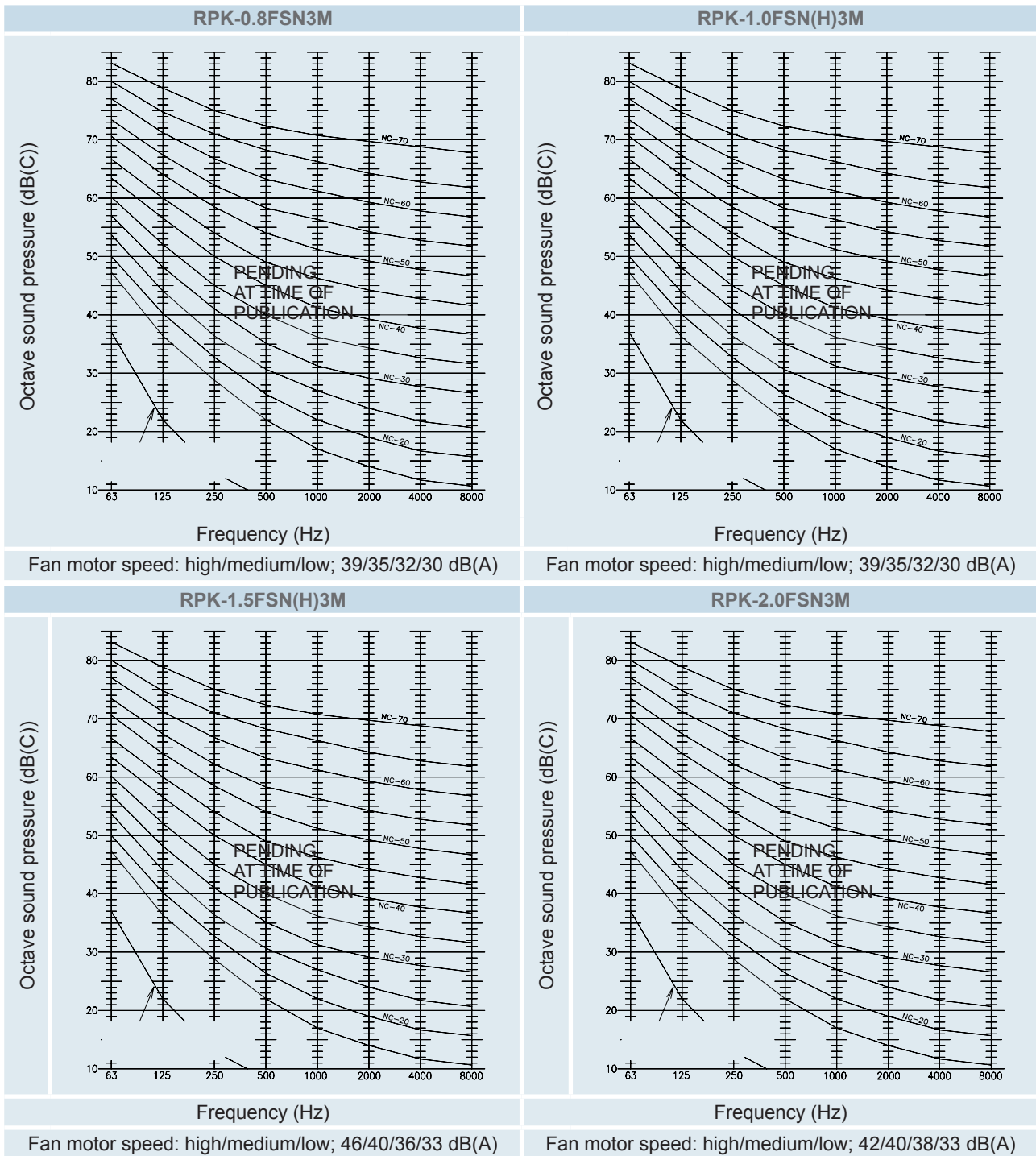


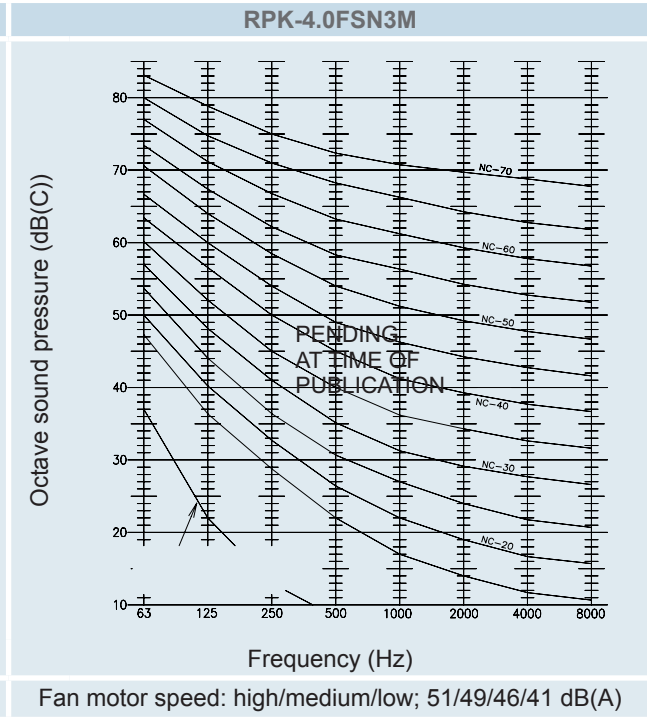
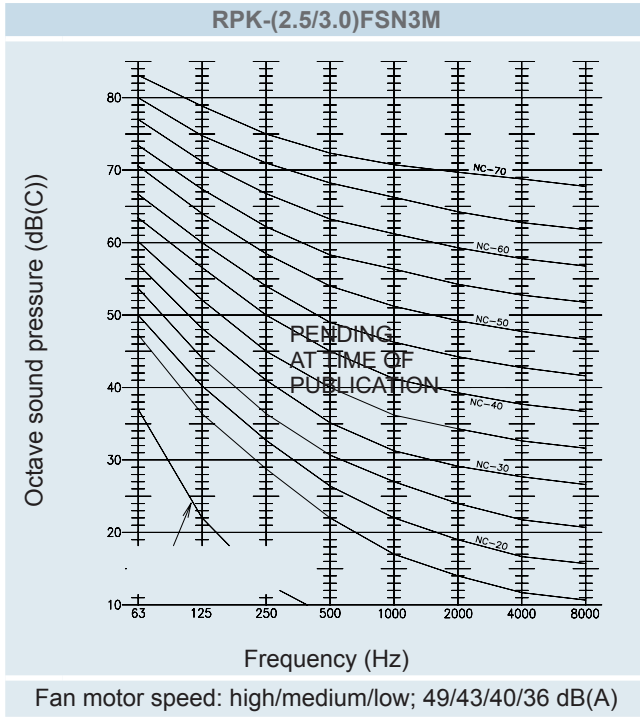
Fan motor speed: high/medium/low; 55/55/52 dB(A)

5.8 RPIM-(0.8-1.5)FSN4E(-DU) - Indoor ducted unit

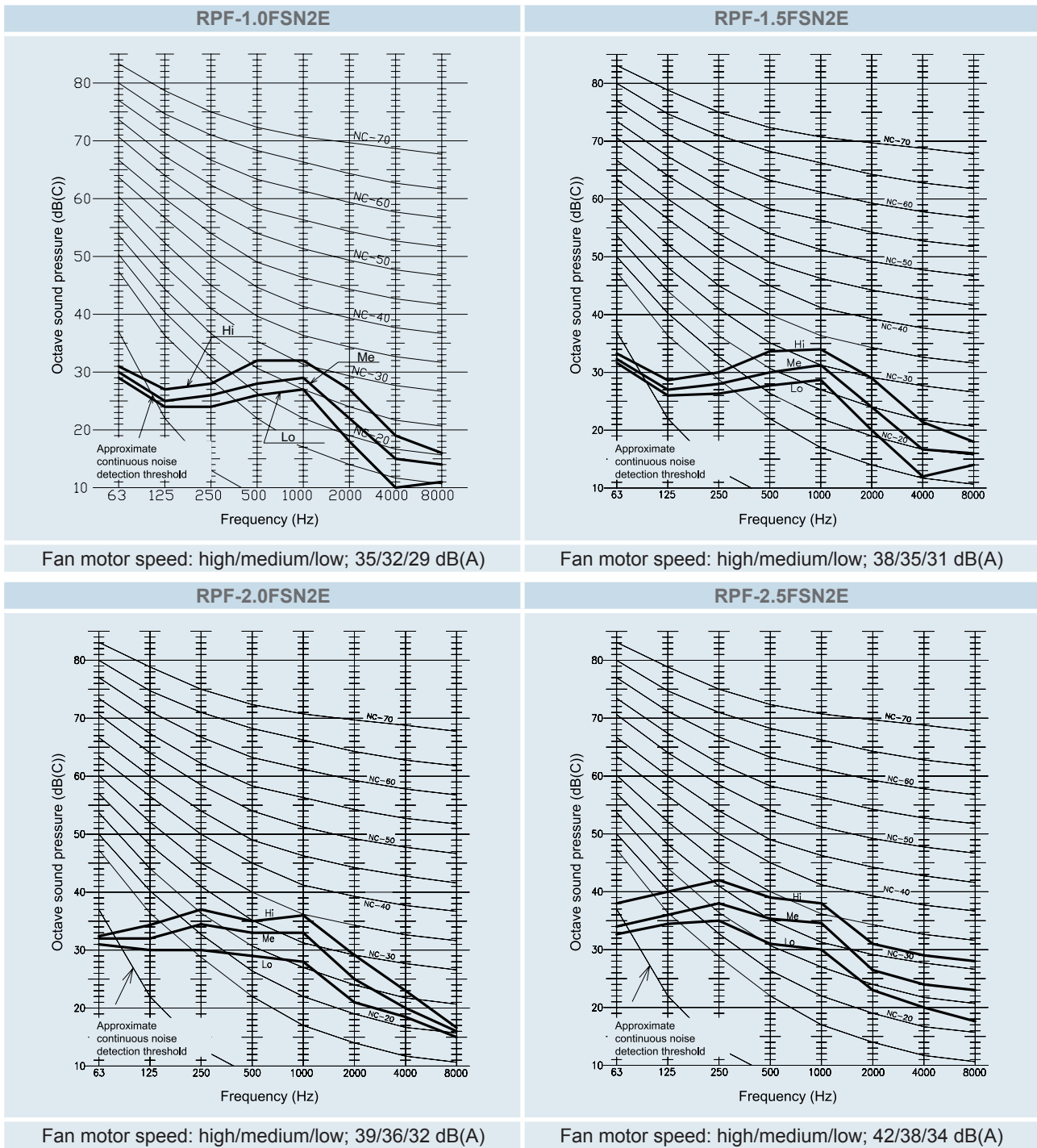


5.9 RPK-(0.8-4.0)FSN(H)2M - Wall type

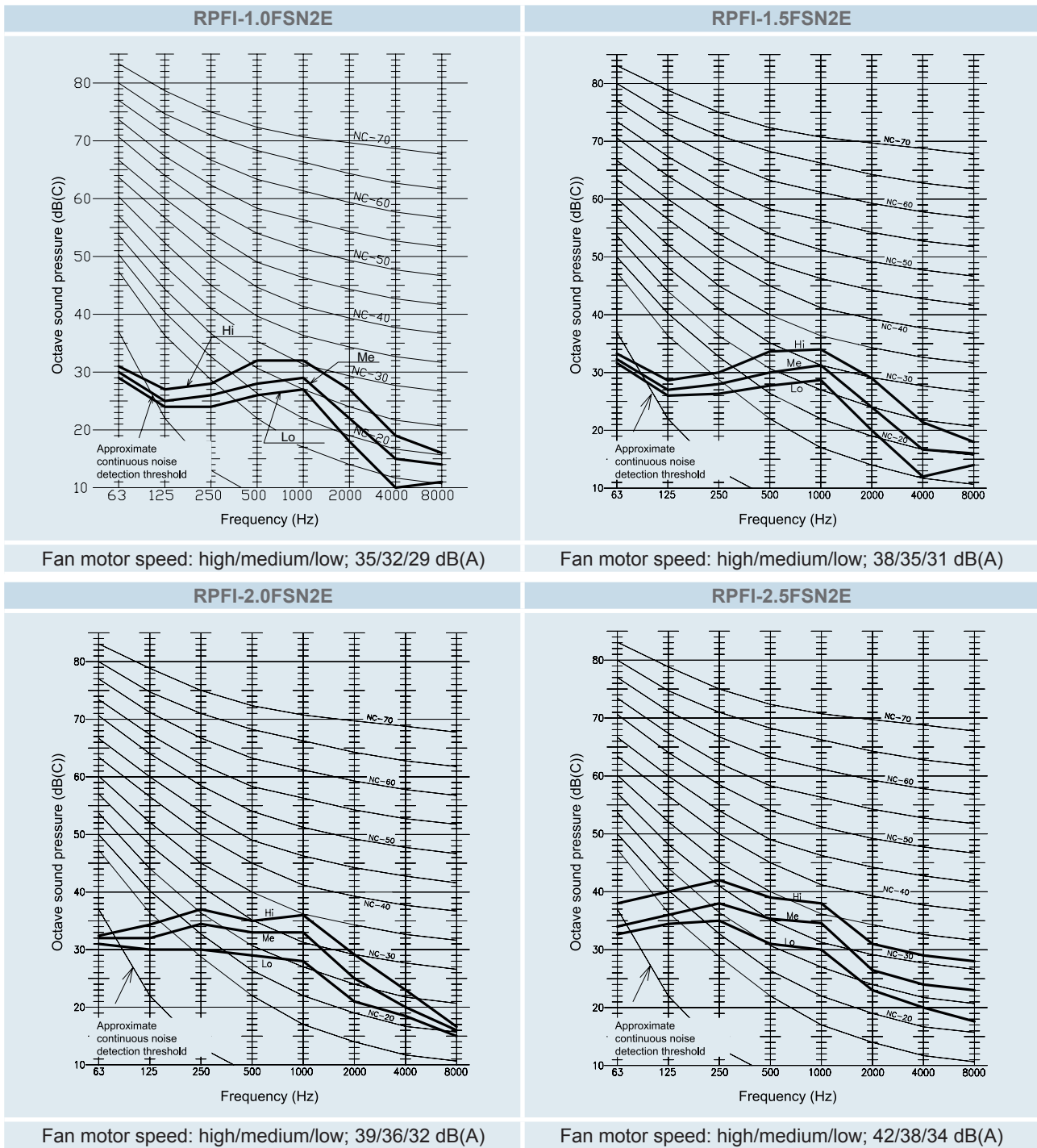




5.10 RPF-(1.0-2.5)FSN2E - Floor type



5.11 RPF1-(1.0-2.5)FSN2E - Floor concealed type



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6. Working range

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6.1 Working range

6.1.1 Power supply

Operating voltage

Between 90 and 110% of the nominal voltage.

Voltage imbalance for nominal power supply 3N~ 400V 50Hz

Up to 3% of each phase, measured at the main terminal of the outdoor unit.

Start-up voltage

Over 85% of the nominal voltage.

6.1.2 Temperature range

The following table indicates the temperature range.

Mode		Cooling	Heating
Indoor temperature	Min.	21 °C DB / 15 °C WB	15 °C DB
	Max.	32 °C DB / 23 °C WB ^(*)	27 °C DB
Outdoor temperature	Min.	-5 °C DB ^(*)	-20 °C WB ^(*)
	Max.	46 °C DB ^(*)	15 °C WB ^(*)

^(*) The temperature may vary according to the outdoor unit. Consult the Technical Catalogue for outdoor units belonging to the systems UTOPIA or SET-FREE.



NOTE

DB: dry bulb; WB: wet bulb



NOTE

DX-Interface working range.

As far as the installation of the DX-Interface follows the installation conditions described in the Hitachi indoor units Technical Catalogue, and behaviour of the connected DX-coil of the AHU or equivalent indoor unit could be considered similar or equivalent to Hitachi indoor units, the some working range declared for Hitachi indoor units applies. Under different installation conditions the working range declared into the Technical Catalogues cannot be guaranteed.

7. General dimensions

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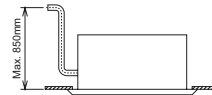
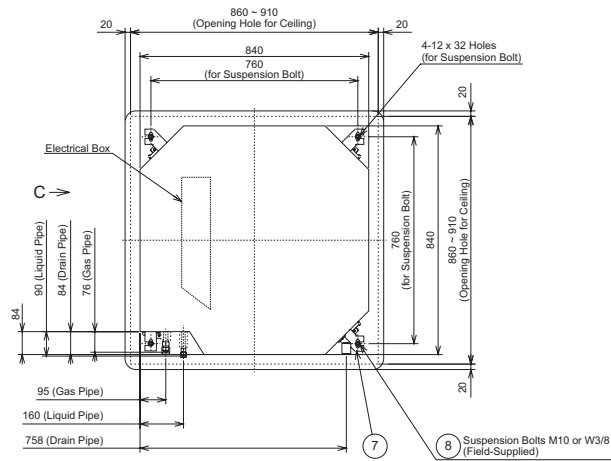
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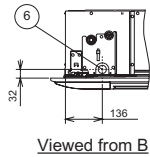
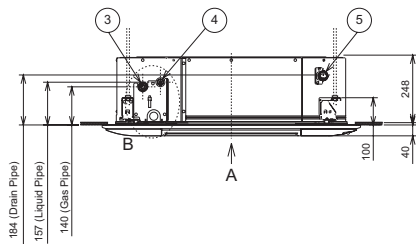
7.1 Dimensions

7.1.1 RCI-(1.0-6.0)FSN3 - 4 way cassette

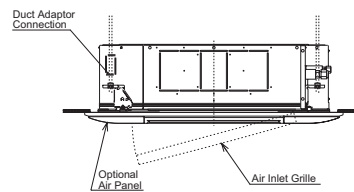
◆ RCI-(1.0-2.5)FSN3 with panel P-AP160NA1



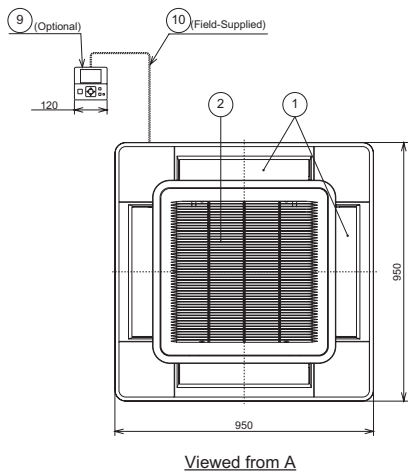
Lifting Drain Piping



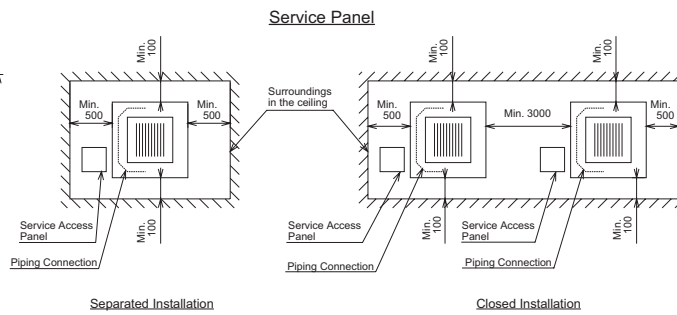
Viewed from B



Viewed from C

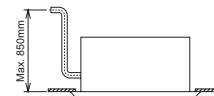
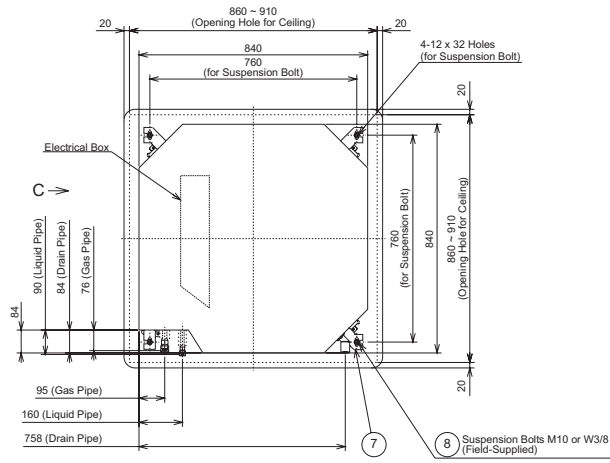


Viewed from A

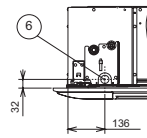
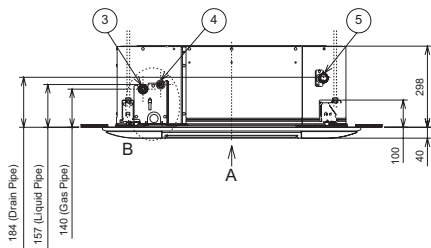


NOTE:
Distance between the wall and panel edge must be min. 1500mm to prevent short circuiting.

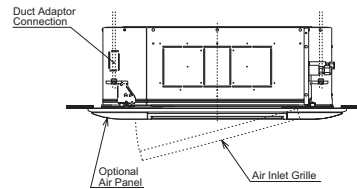
◆ RCI-(3.0-6.0)FSN3 with panel P-AP160NA1



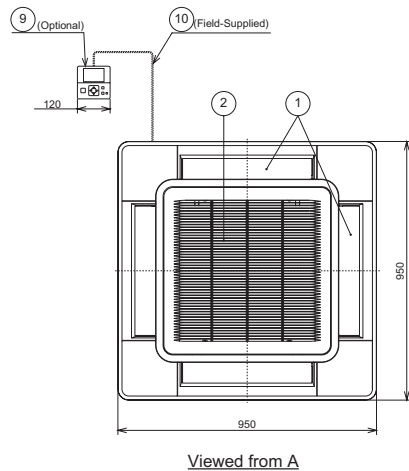
Lifting Drain Piping



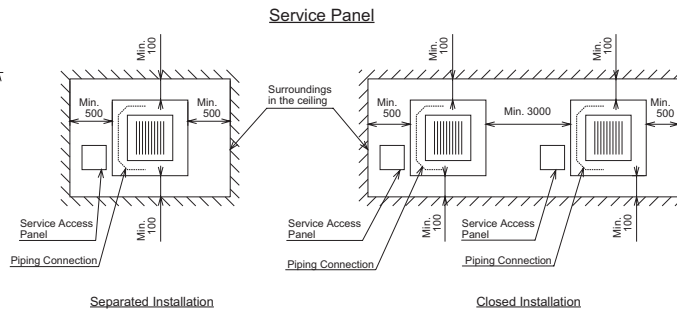
Viewed from B



Viewed from C



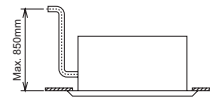
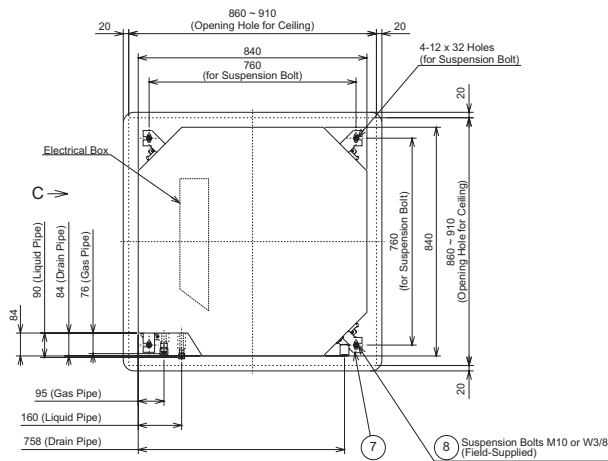
Viewed from A



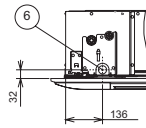
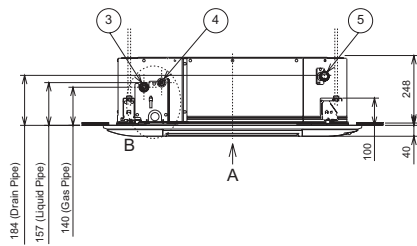
NOTE:
Distance between the wall and panel edge must be
min. 1500mm to prevent short circuiting.



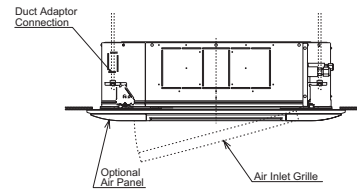
◆ RCI-(1.0-2.5)FSN3 with panel P-AP160NAE



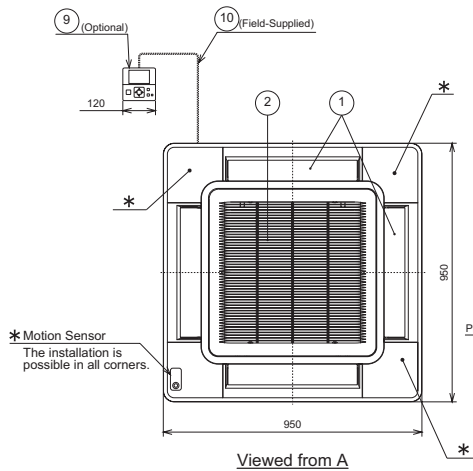
Lifting Drain Piping



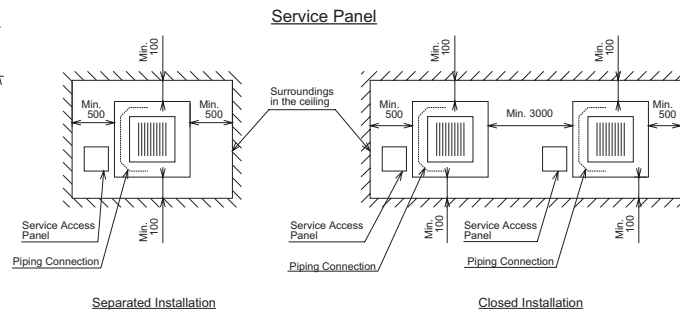
Viewed from B



Viewed from C

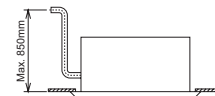
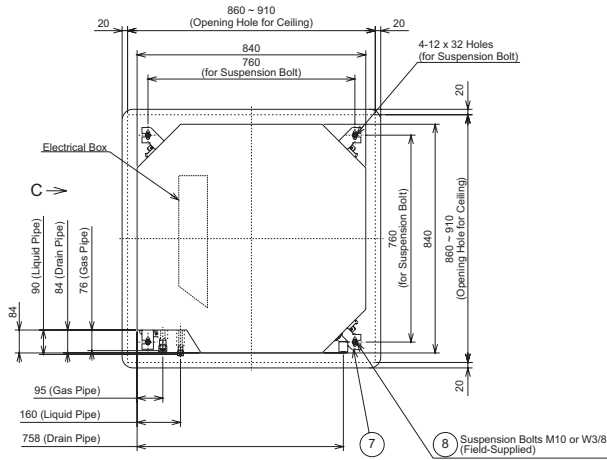


Viewed from A

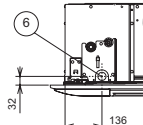
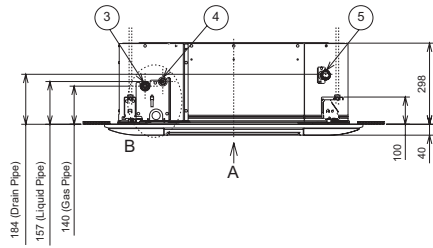


NOTE:
Distance between the wall and panel edge must be min. 1500mm to prevent short circuiting.

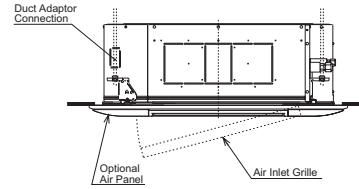
◆ RCI-(3.0-6.0)FSN3 with panel P-AP160NAE



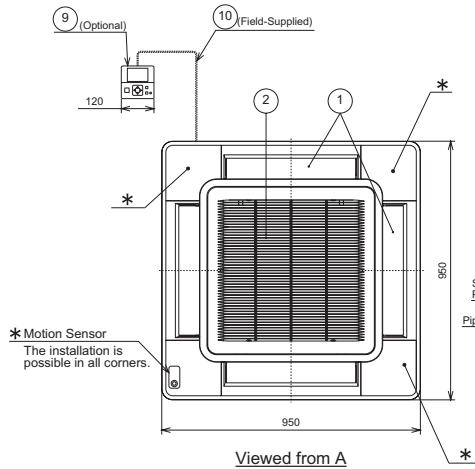
Lifting Drain Piping



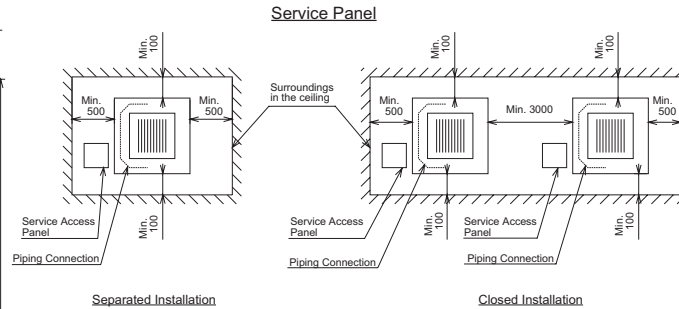
Viewed from B



Viewed from C



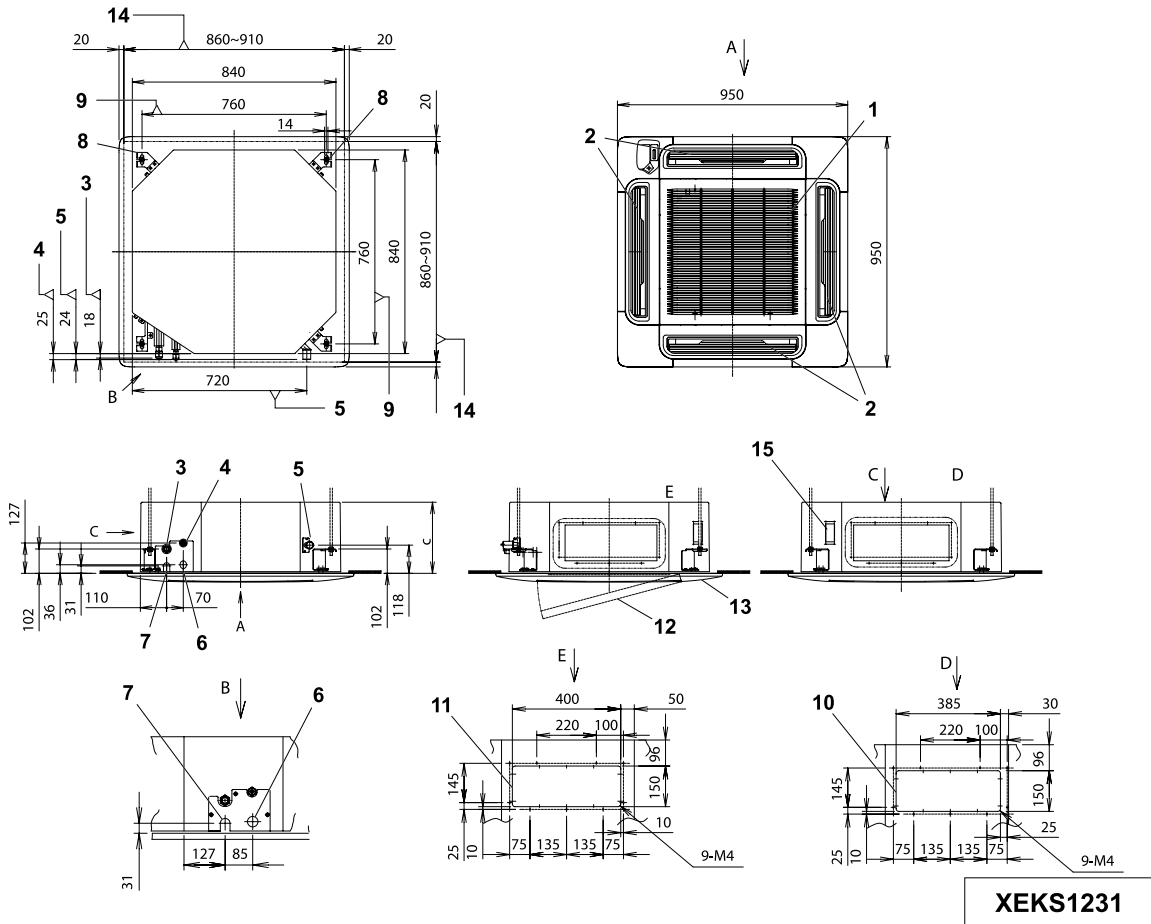
Viewed from A



NOTE:
Distance between the wall and panel edge must be min. 1500mm to prevent short circuiting.



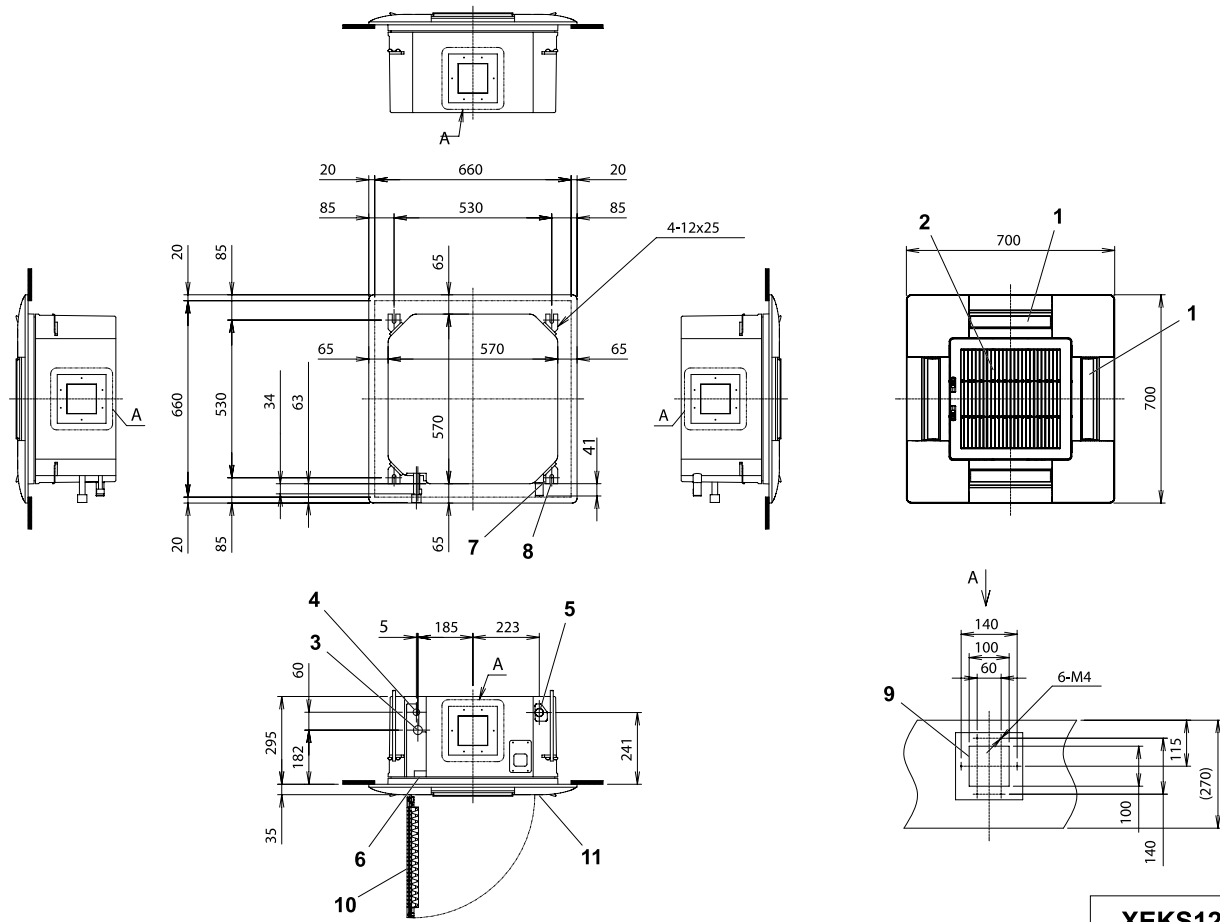
7.1.2 RCI-(1.0-6.0)FSN3Ei - 4-way cassette



No.	Description	Remarks
1	Air inlet	
2	Air outlet	4-way
3	Refrigerant connection (gas)	Flare nut. RCI-(1.0/1.5), ϕ 12.7; RCI-(2.0-6.0), ϕ 15.88
4	Refrigerant connection (liquid)	Flare nut. RCI-(1.0-2.0), ϕ 6.35; RCI-(2.5-6.0), ϕ 9.53
5	Drain connection	ϕ 32
6	Wiring hole	Die cut hole. ϕ 32.5
7	Wiring hole	30 x 39
8	Unit suspension bracket	
9	Unit suspension bolt	(4x) M10 or W3/8
10	Air supply duct connection	Die cut hole 150 x 385
11	Additional air supply duct connection	Die cut hole 150 x 400
12	Air inlet grille	
13	Optional air panel	P-N23NA
14	Size of housing opening required in ceiling	
15	Fresh air intake	(4x) 14 x 26
c	Unit height	RCI-(1.0-2.5), 248; RCI-(3.0-6.0), 298

All measurements are in mm.

7.1.3 RCIM-(0.8-2.0)FSN2 - 4-way cassette (compact)



XEKS1256

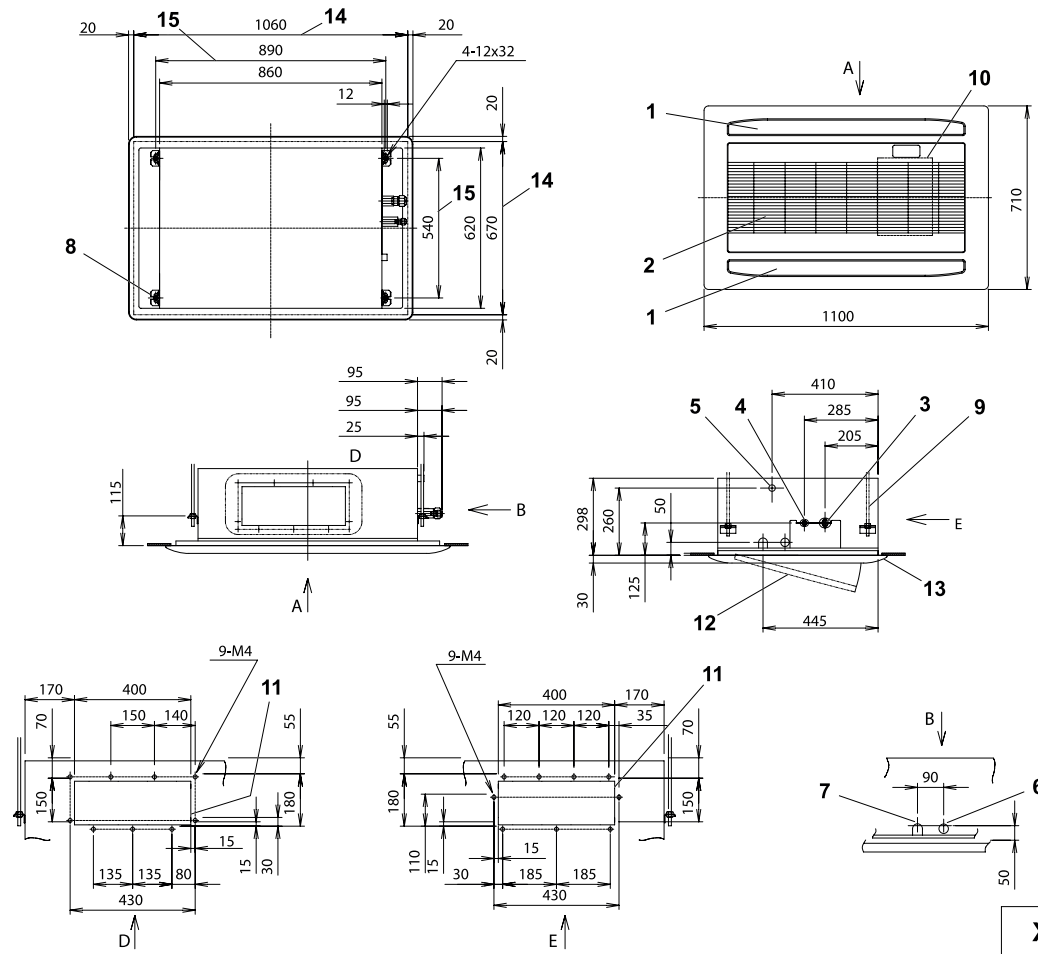


No.	Description	Remarks
1	Air outlet	4-way
2	Air inlet	
3	Refrigerant connection (gas)	Flare nut. RCIM-(1.0/1.5), $\phi 12.7$; RCIM-(2.0), $\phi 15.88$
4	Refrigerant connection (liquid)	Flare nut, $\phi 6.35$
5	Drain connection	$\phi 32$
6	Wiring hole	20 x 40
7	Unit suspension bracket	
8	Unit suspension (bolt distance)	(4x) M10 or W3/8
9	Air supply duct connection	Die cut hole 100 x 100
10	Air inlet grille	
11	Optional air panel	P-N23WAM

All measurements are in mm.

7.1.4 RCD-(1.0-5.0)FSN2 - 2-way cassette

◆ **RCD-(1.0-3.0)FSN2 - 2-way cassette**

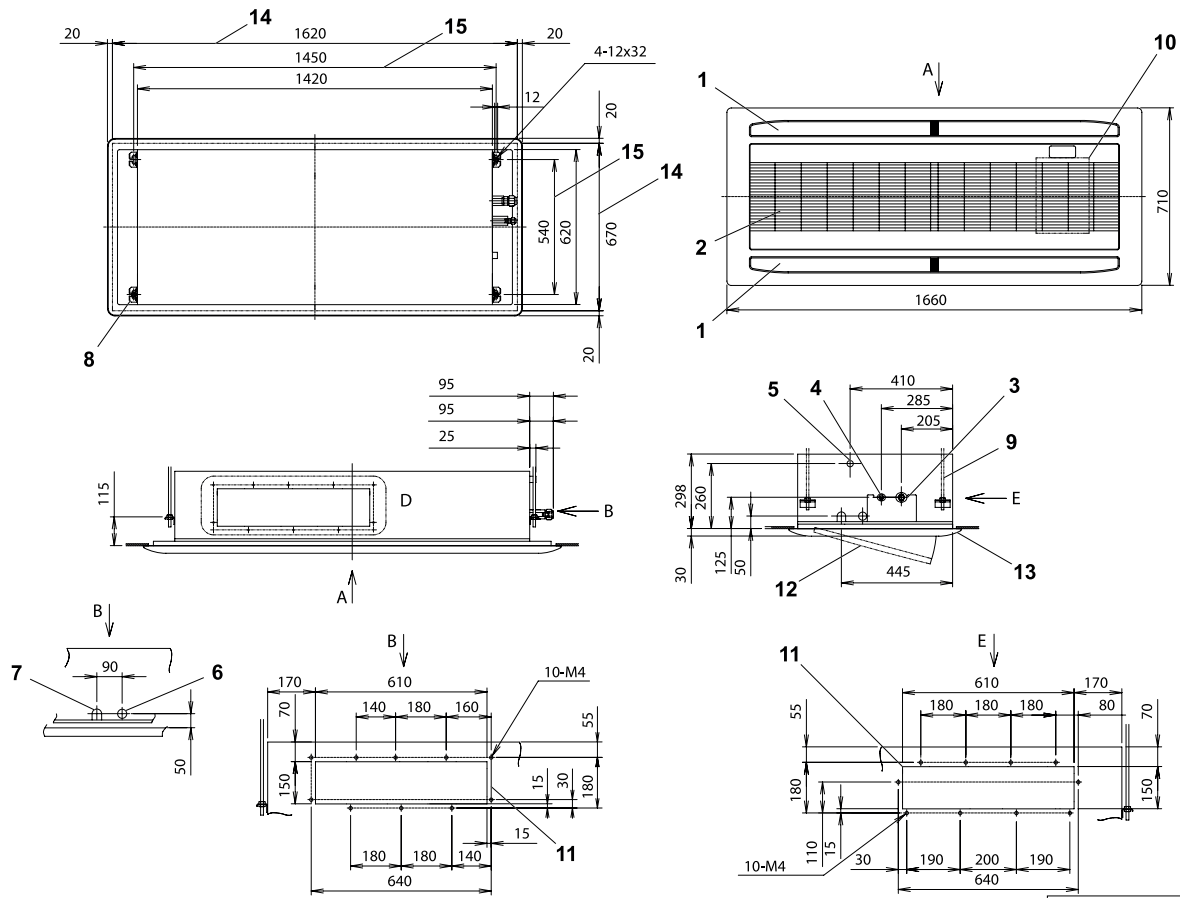


XEKS1264

No.	Description	Remarks
1	Air outlet	
2	Air inlet	
3	Refrigerant connection (gas)	Flare nut. RCD-(1.0/1.5), ϕ 12.7; RCD-(2.0-3.0), ϕ 15.88
4	Refrigerant connection (liquid)	Flare nut. RCD-(1.0-2.0), ϕ 6.35; RCD-(2.5/3.0), ϕ 9.53
5	Drain connection	ϕ 32
6	Wiring hole	ϕ 32.5
7	Wiring hole	30 x 39
8	Unit suspension bracket	
9	Unit suspension bolt	(4x) M10 or W3/8
10	Electric control box	
11	Air supply duct connection	(2x) 150 x 400
12	Air inlet grille	
13	Optional air panel	P-N23DNA
14	Size of housing opening required in ceiling	
15	Distance measurements between unit suspension bolts	

All measurements are in mm.

◆ RCD-(4.0/5.0)FSN2 - 2-way cassette



XEKS1265

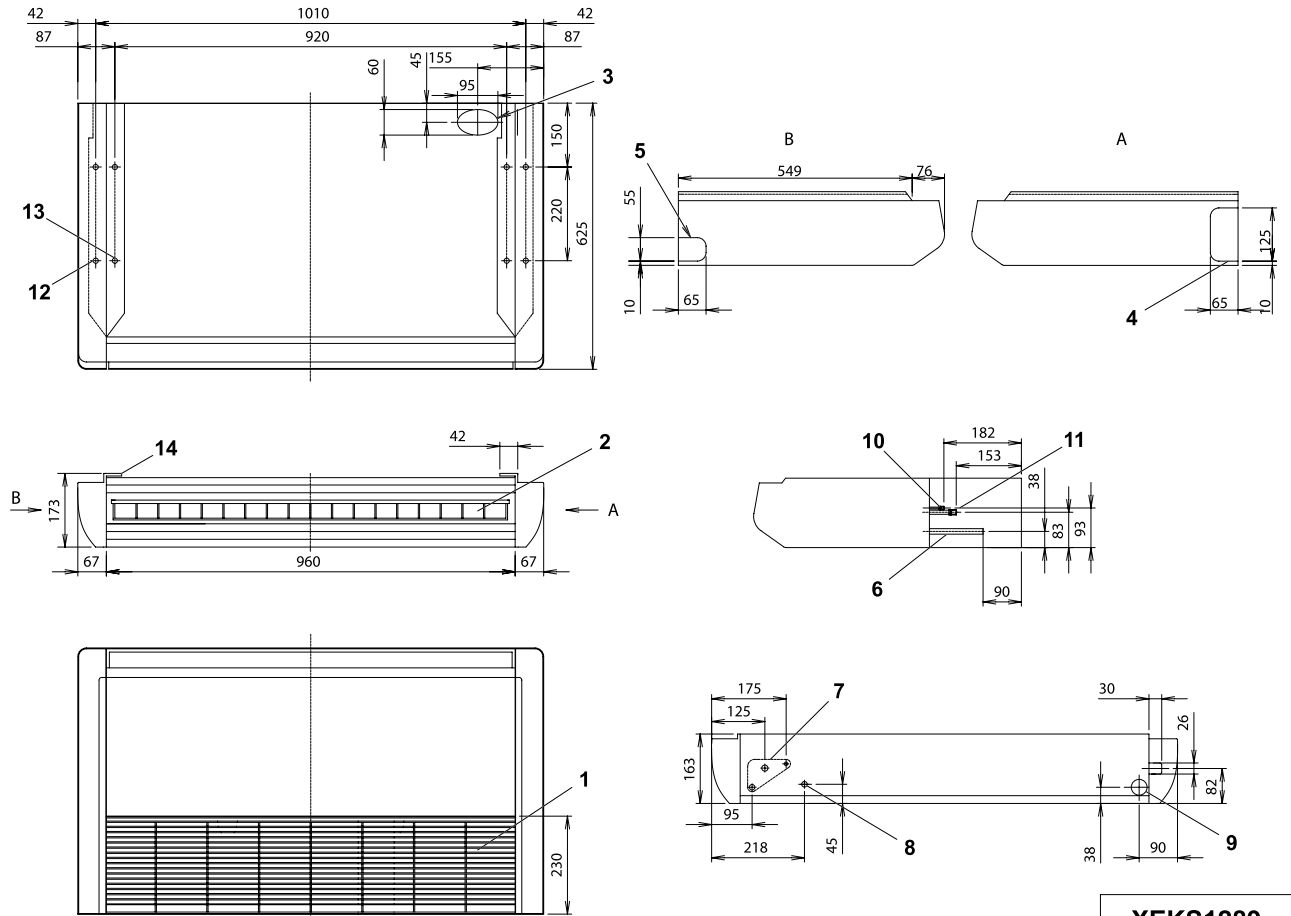


No.	Description	Remarks
1	Air outlet	
2	Air inlet	
3	Refrigerant connection (gas)	Flare nut, ϕ 15.88
4	Refrigerant connection (liquid)	Flare nut, ϕ 9.53
5	Drain connection	ϕ 32
6	Wiring hole	ϕ 32.5
7	Wiring hole	30 x 39
8	Unit suspension bracket	
9	Unit suspension bolt	(4x) M10 or W3/8
10	Electric control box	
11	Air supply duct connection	(2x) 150 x 610
12	Air inlet grille	
13	Optional air panel	P-N46DWA
14	Size of housing opening required in ceiling	
15	Distance measurements between unit suspension bolts	

All measurements are in mm.

7.1.5 RPC-(2.0-6.0)FSN2E - Ceiling type

◆ **RPC-2.0FSN2E - Ceiling type**

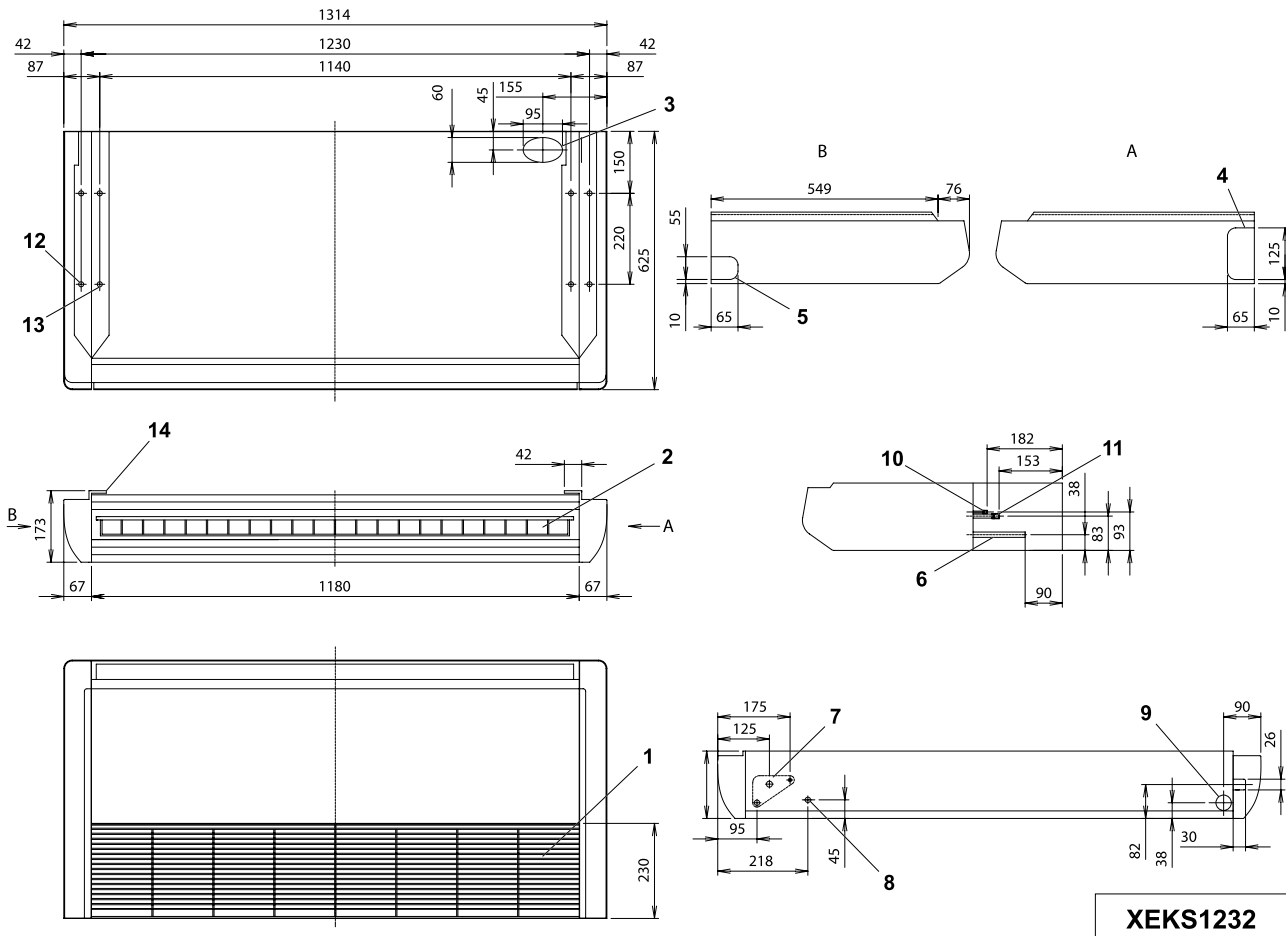


XEKS1289

No.	Description	Remarks
1	Air inlet	
2	Air outlet	
3	Hole for gas and liquid refrigerant pipes	Die cut hole at top.
4	Hole for gas and liquid refrigerant pipes	Die cut hole on side A.
5	Drain hole	Die cut hole on side B.
6	Drain connection	(Side A). $\phi 25$ (outer diameter)
7	Hole for gas and liquid refrigerant pipes	Die cut hole.
8	Wiring hole	Die cut hole. $\phi 32.5$
9	Drain hole	(Side B). $\phi 46$ Die cut hole.
10	Refrigerant connection (liquid)	Flare nut. $\phi 6.35$
11	Refrigerant connection (gas)	Flare nut. $\phi 15.88$
12	Unit suspension bolt hole	$\phi 12$
13	Unit suspension bolt hole	$\phi 12$. The bracket can be fixed in this position.
14	Unit suspension bracket	

All measurements are in mm.

◆ **RPC-(2.5-3.0)FSN2E - Ceiling type**



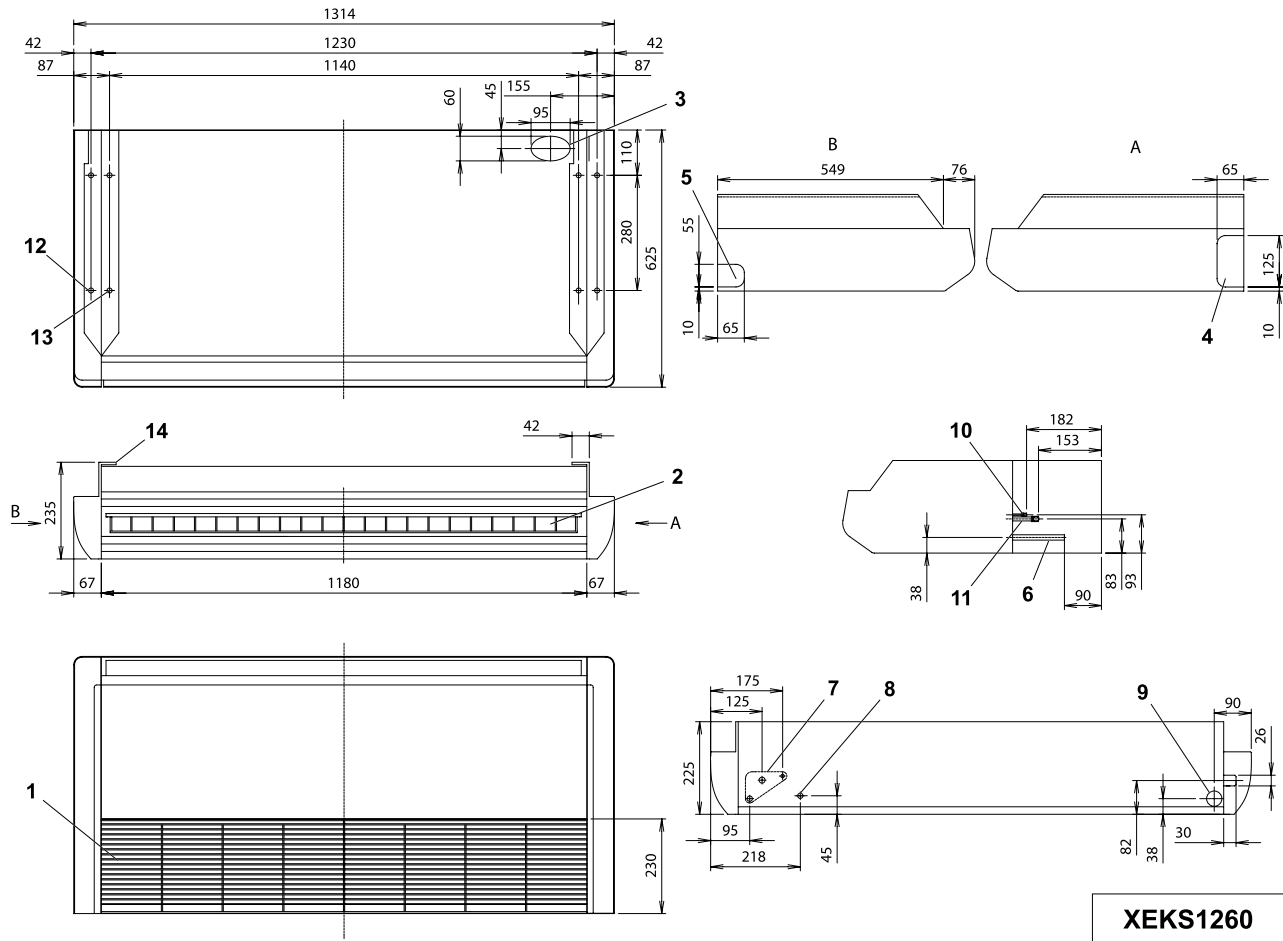
XEKS1232



No.	Description	Remarks
1	Air inlet	
2	Air outlet	
3	Hole for gas and liquid refrigerant pipes	Die cut hole at top.
4	Hole for gas and liquid refrigerant pipes	Die cut hole on side A.
5	Drain hole	Die cut hole on side B.
6	Drain connection	(Side A). $\phi 25$ (outer diameter)
7	Hole for gas and liquid refrigerant pipes	Die cut hole.
8	Wiring hole	Die cut hole. $\phi 32.5$
9	Drain hole	(Side B). $\phi 46$ Die cut hole.
10	Refrigerant connection (liquid)	Flare nut. $\phi 9.53$
11	Refrigerant connection (gas)	Flare nut. $\phi 15.88$
12	Unit suspension bolt hole	$\phi 12$
13	Unit suspension bolt hole	$\phi 12$. The bracket can be fixed in this position.
14	Unit suspension bracket	

All measurements are in mm.

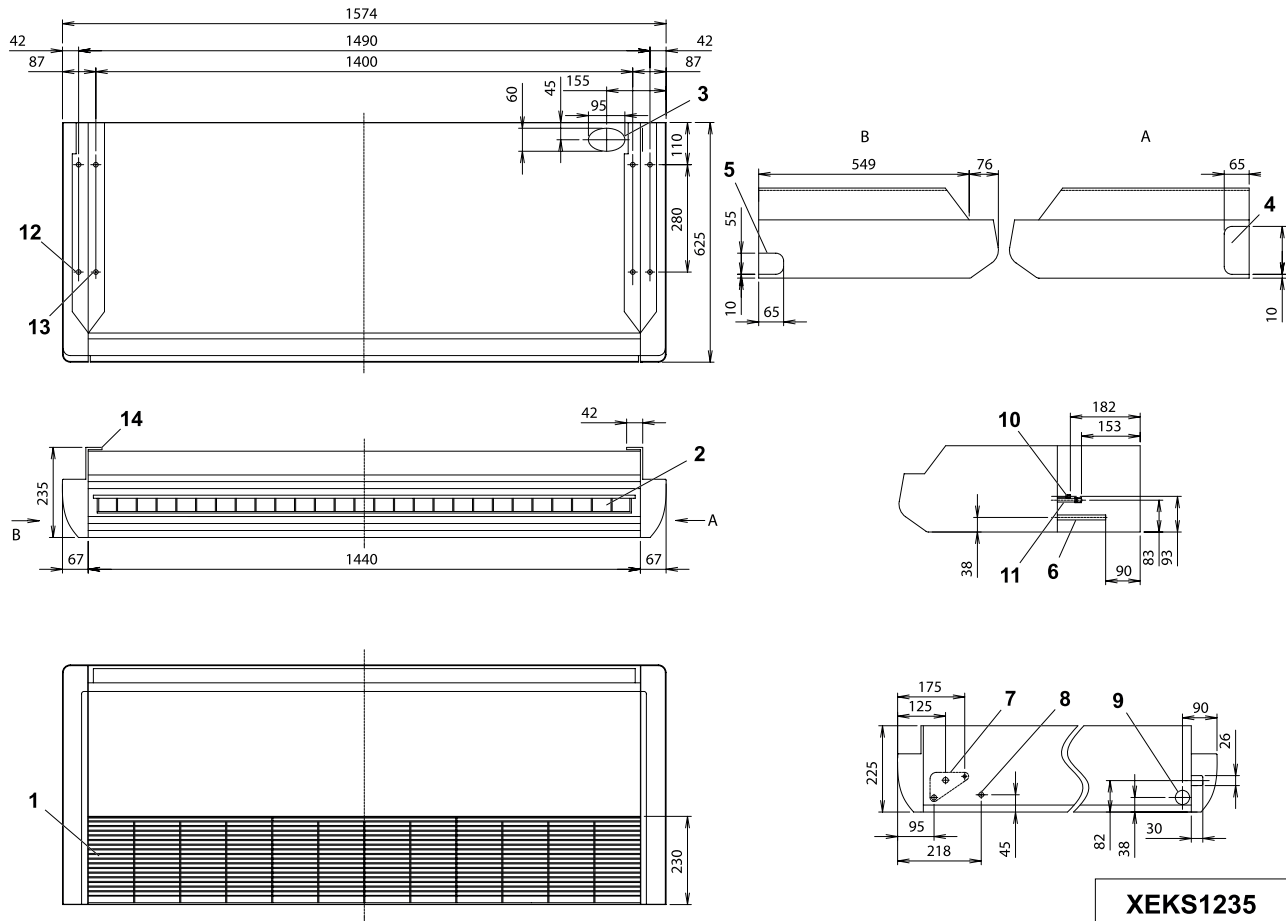
◆ **RPC-4.0FSN2E - Ceiling type**



No.	Description	Remarks
1	Air inlet	
2	Air outlet	
3	Hole for gas and liquid refrigerant pipes	Die cut hole at top.
4	Hole for gas and liquid refrigerant pipes	Die cut hole on side A.
5	Drain hole	Die cut hole on side B.
6	Drain connection	(Side A). $\varnothing 25$ (outer diameter)
7	Hole for gas and liquid refrigerant pipes	Die cut hole.
8	Wiring hole	Die cut hole. $\varnothing 32.5$
9	Drain hole	(Side B). $\varnothing 46$ Die cut hole.
10	Refrigerant connection (liquid)	Flare nut. $\varnothing 9.53$
11	Refrigerant connection (gas)	Flare nut. $\varnothing 15.88$
12	Unit suspension bolt hole	$\varnothing 12$
13	Unit suspension bolt hole	$\varnothing 12$. The bracket can be fixed in this position.
14	Unit suspension bracket	

All measurements are in mm.

◆ **RPC-(5.0/6.0)FSN2E - Ceiling type**



XEKS1235

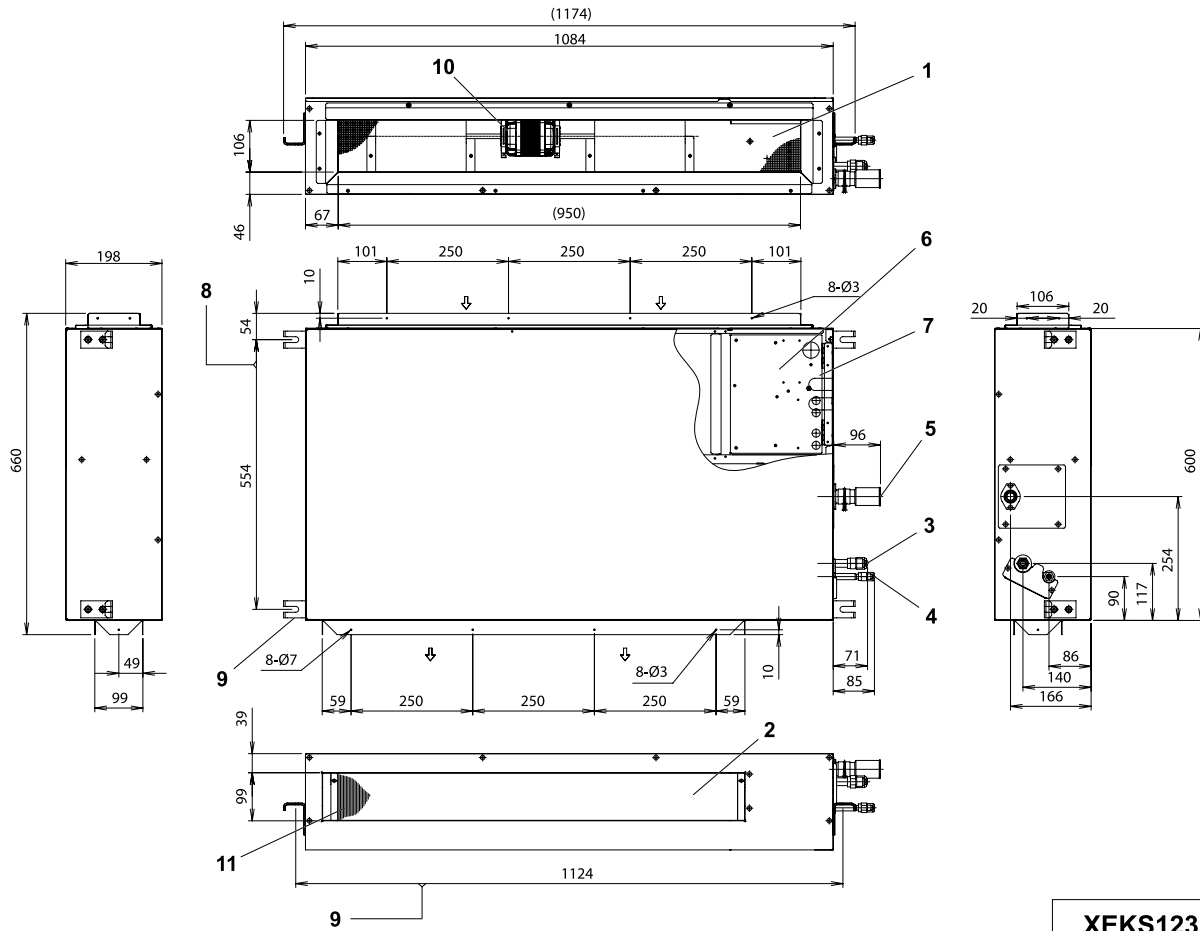


No.	Description	Remarks
1	Air inlet	
2	Air outlet	
3	Hole for gas and liquid refrigerant pipes	Die cut hole at top.
4	Hole for gas and liquid refrigerant pipes	Die cut hole on side A.
5	Drain hole	Die cut hole on side B.
6	Drain connection	(Side A). $\phi 25$ (outer diameter)
7	Hole for gas and liquid refrigerant pipes	Die cut hole.
8	Wiring hole	Die cut hole. $\phi 32.5$
9	Drain hole	(Side B). $\phi 46$ Die cut hole.
10	Refrigerant connection (liquid)	Flare nut. $\phi 9.53$
11	Refrigerant connection (gas)	Flare nut. $\phi 15.88$
12	Unit suspension bolt hole	$\phi 12$
13	Unit suspension bolt hole	$\phi 12$. The bracket can be fixed in this position.
14	Unit suspension bracket	

All measurements are in mm.

7.1.6 RPI-(0.8-10.0)FSN(3/4)E - Indoor ducted unit

◆ **RPI-(0.8-1.5)FSN4E - Indoor ducted unit**

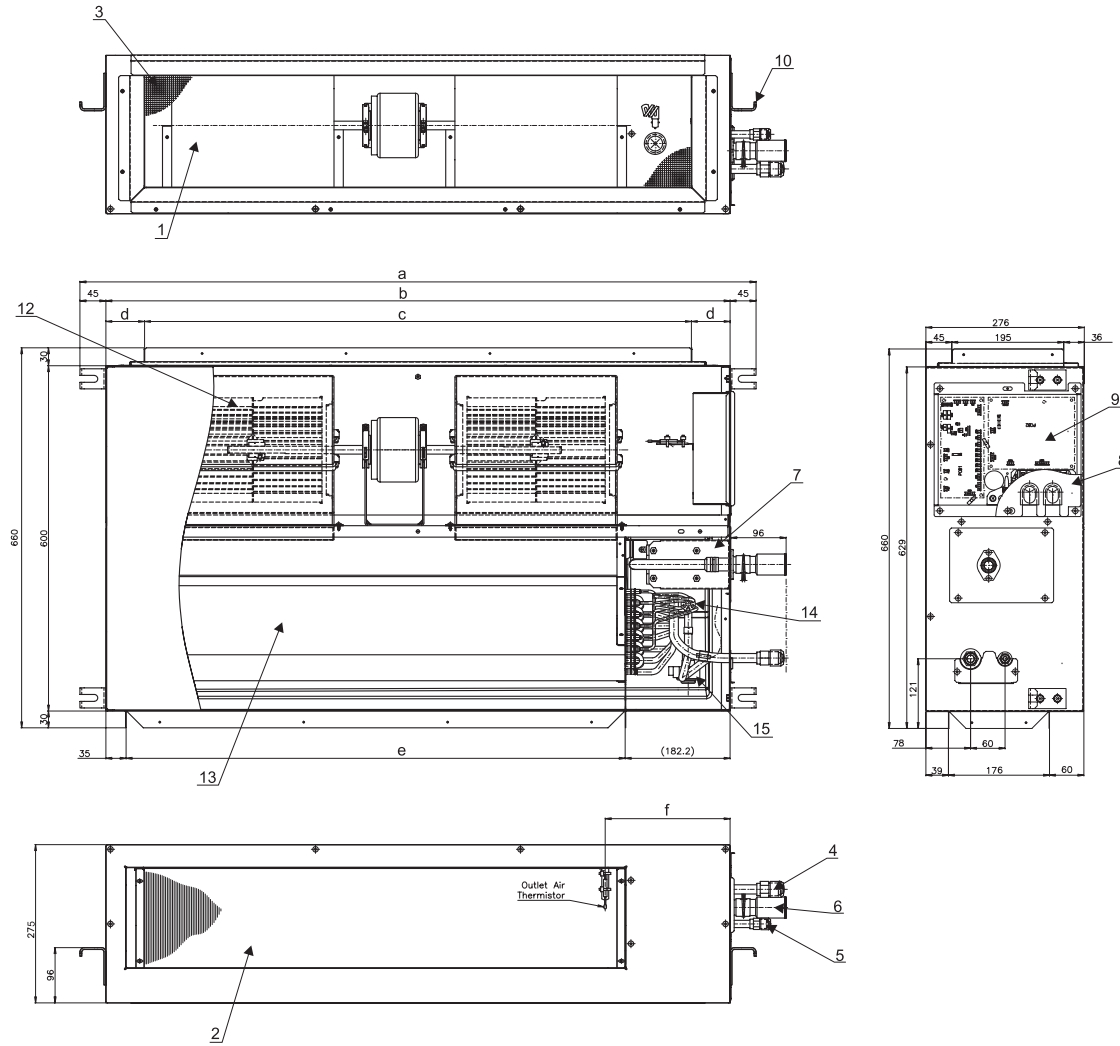


XEKS1233

No.	Description	Remarks
1	Air inlet	
2	Air outlet	
3	Refrigerant connection (gas)	Flare nut. $\phi 12.7$
4	Refrigerant connection (liquid)	Flare nut. $\phi 6.35$
5	Drain connection	$\phi 32$ (outer diameter)
6	Electrical box	
7	Wiring hole	
8	Unit suspension bolt	(4x) M10 or W3/8
9	Unit suspension bracket	(4x) 12x35 (holes)
10	Fan motor	4 x $\phi 20$
11	Evaporator	

All measurements are in mm.

◆ RPI-(2.0-6.0)FSN4E - Indoor ducted unit



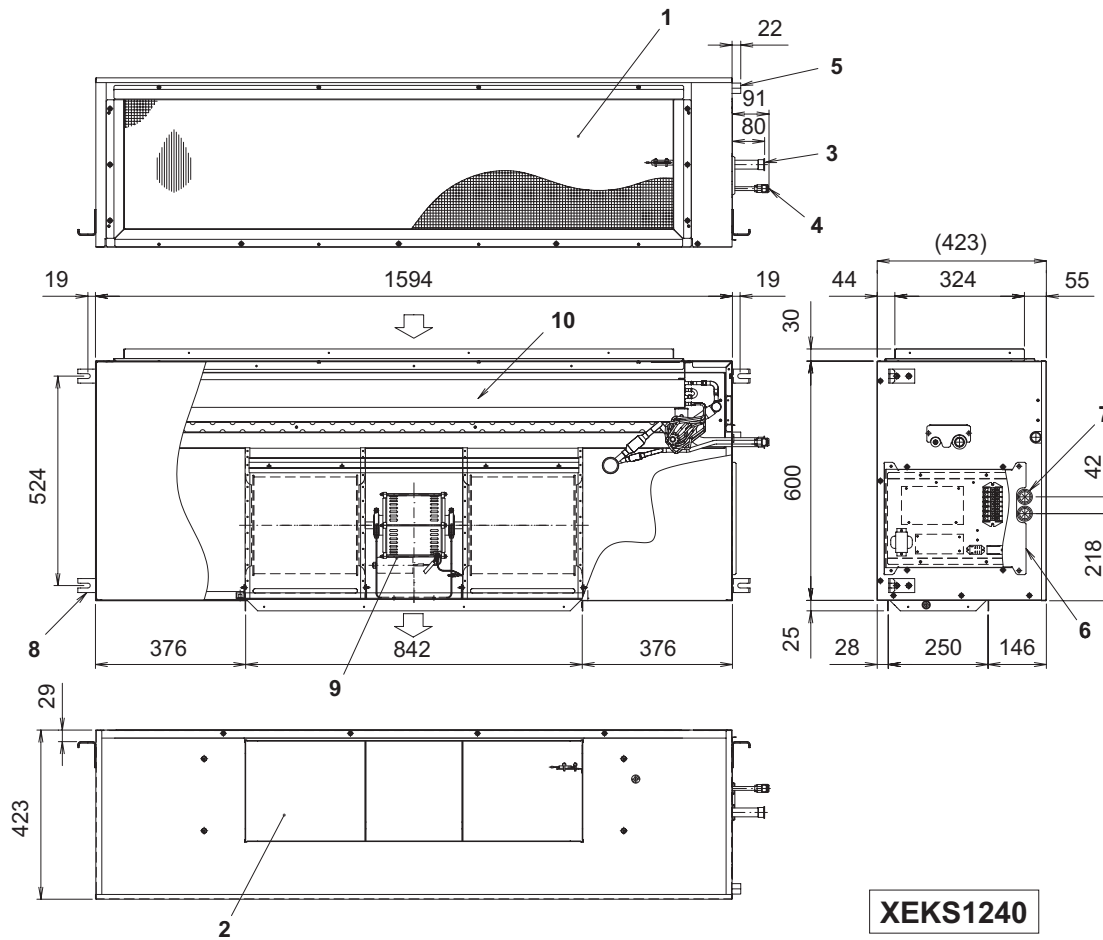
XEK01237

No.	Description	No.	Description
1	Air inlet	11	Fan motor
2	Air outlet	12	Fan
3	Air filter	13	Heat exchanger
4	Refrigerant gas connection	14	Header
5	Refrigerant liquid connection	15	Expansion valve
6	Drain pipe connection		
7	Drain pump mechanism		
8	Electrical box cover		
9	Electrical wiring diagram		
10	Unit suspension bracket		

Models	a	b	c	d	e	f
RPI-(2.0-3.0)FSN4E	1174	1084	950	67	867	217
RPI-(4.0-6.0)FSN4E	1564	1474	1240	117	1257	414

All measurements are in mm.

◆ RPI-(8.0-10.0)FSN3E - Indoor ducted unit

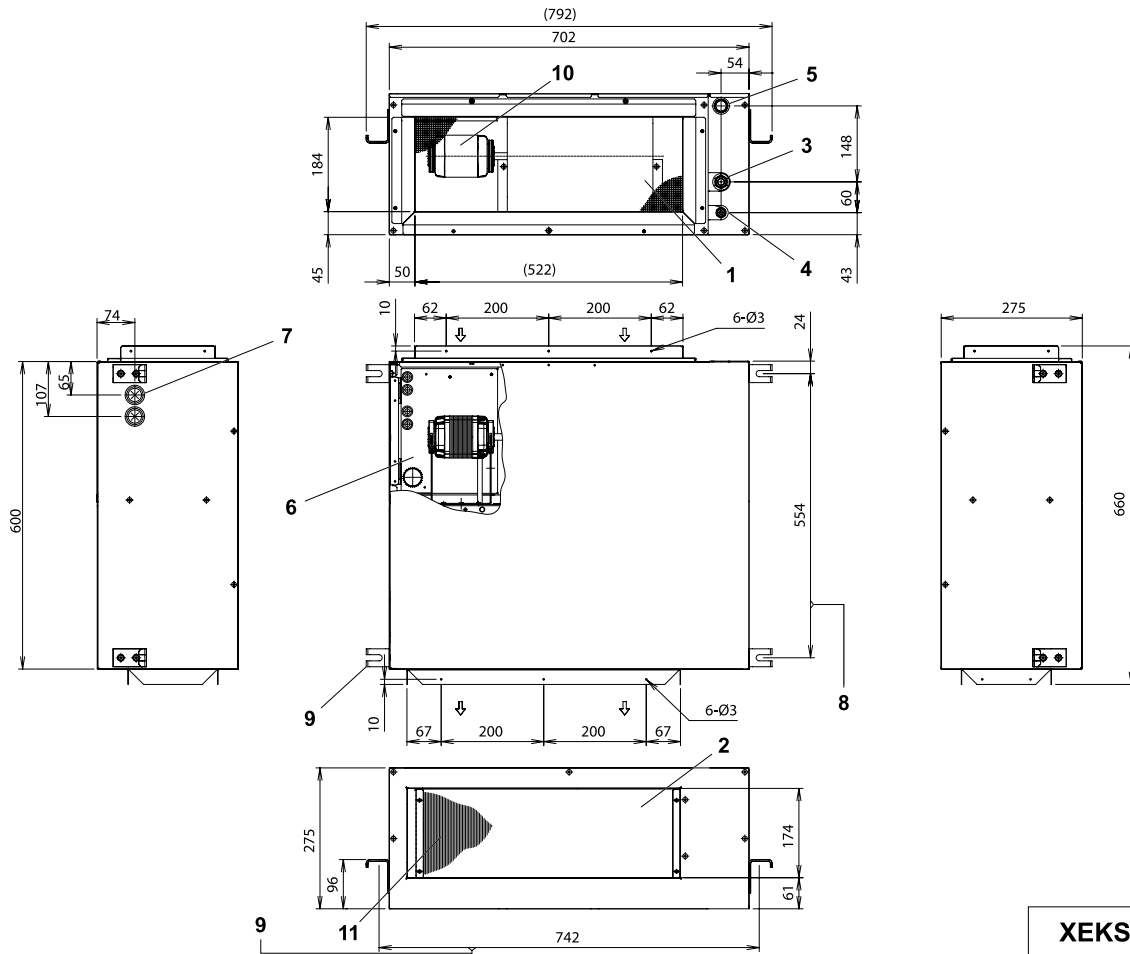


XEKS1240

No.	Description	Remarks
1	Air inlet	
2	Air outlet	
3	Refrigerant connection (gas)	ø19.05 RPI-(8.0), ø22.2 RPI-(10.0)
4	Refrigerant connection (liquid)	Flare nut. ø9.53 RPI-(8.0/10.0)
5	Drain connection	ø25 (outer diameter)
6	Electrical box	
7	Wiring hole	
8	Unit suspension bracket	(4x)
9	Fan motor	
10	Evaporator	

All measurements are in mm.

7.1.7 RPIM-(0.8-1.5)FSN4E(-DU) - Indoor ducted unit



XEKS1234

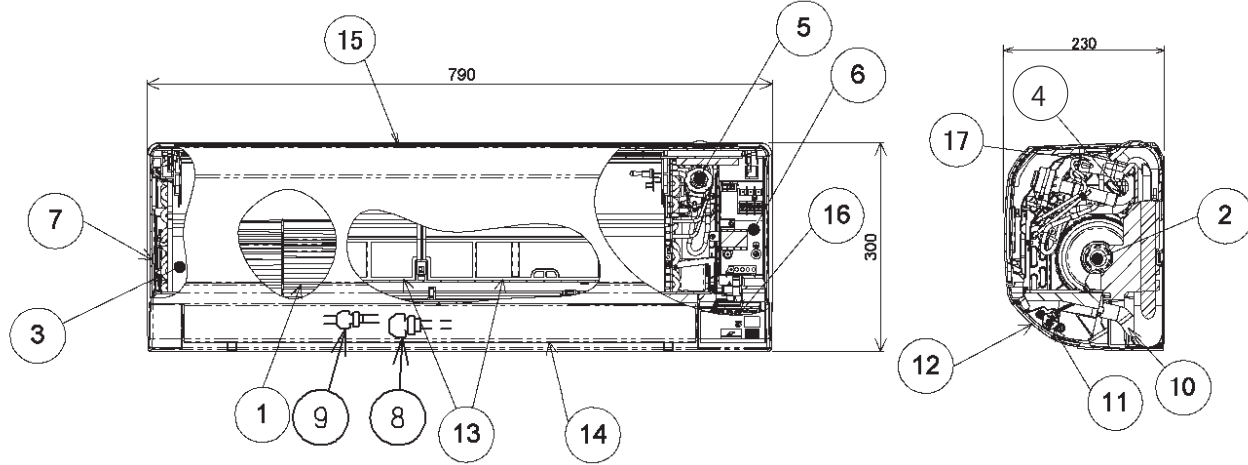


No.	Description	Remarks
1	Air inlet	
2	Air outlet	
3	Refrigerant connection (gas)	Flare nut. $\phi 12.7$
4	Refrigerant connection (liquid)	Flare nut. $\phi 6.35$
5	Drain connection	$\phi 32$ (outer diameter)
6	Electrical box	
7	Wiring hole	
8	Unit suspension bolt	(4x) M10 or W3/8
9	Unit suspension bracket	(4x) 12x35 (holes)
10	Fan motor	
11	Evaporator	

All measurements are in mm.

7.1.8 RPK-(0.8-4.0)FSN3M / RPK-(0.8/1.5)FSNH3M with expansion valve kit EV-1.5N1 - Wall type

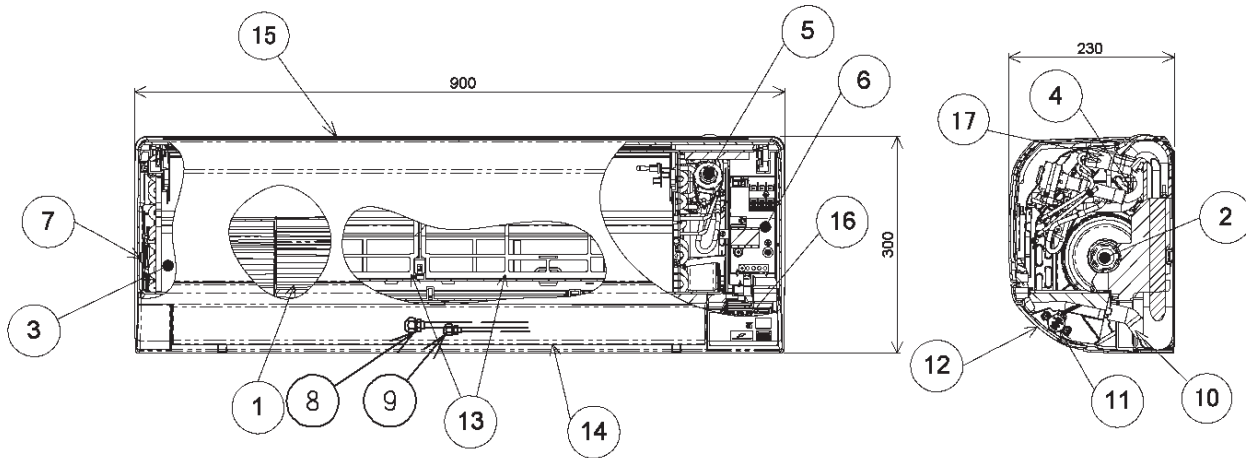
◆ **RPK-(0.8-1.0)FSN(H)3M - Wall type**



No.	Description	No.	Description
1	Fan	10	Drain Pipe Connection
2	Fan Motor	11	Auto Louver Motor
3	Heat Exchanger	12	Drain Pan
4	Strainer	13	Air Filter
5	Micro-Computer Control Expansion Valve	14	Air Outlet
6	Electrical Control Box	15	Air Inlet
7	Bearing	16	Receiver Part
8	Refrigerant Gas Pipe Connection	17	Distributor
9	Refrigerant Liquid Pipe Connection		

All measurements are in mm.

◆ **RPK-1.5FSN(H)3M - Wall type**

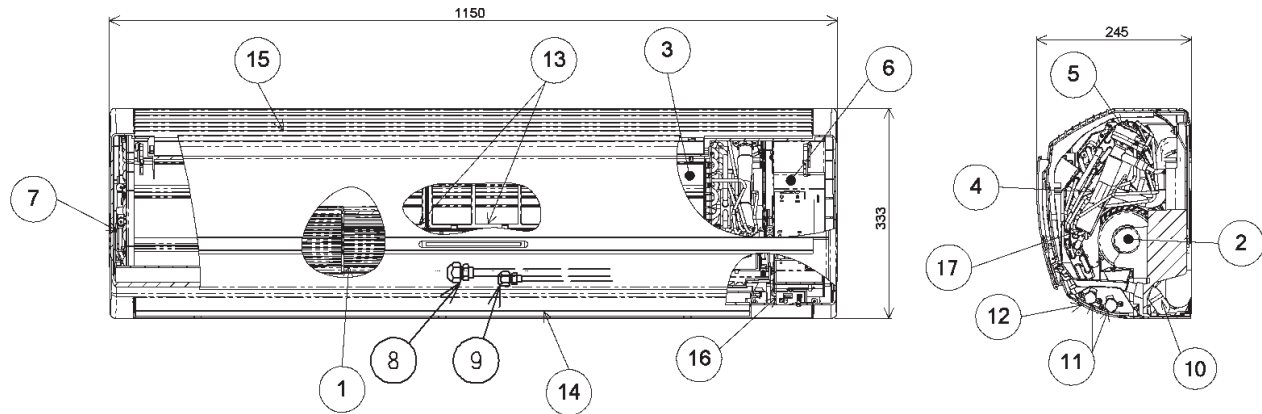


No.	Description	No.	Description
1	Fan	10	Drain Pipe Connection
2	Fan Motor	11	Auto Louver Motor
3	Heat Exchanger	12	Drain Pan
4	Strainer	13	Air Filter
5	Micro-Computer Control Expansion Valve	14	Air Outlet
6	Electrical Control Box	15	Air Inlet
7	Bearing	16	Receiver Part
8	Refrigerant Gas Pipe Connection	17	Distributor
9	Refrigerant Liquid Pipe Connection		

All measurements are in mm.



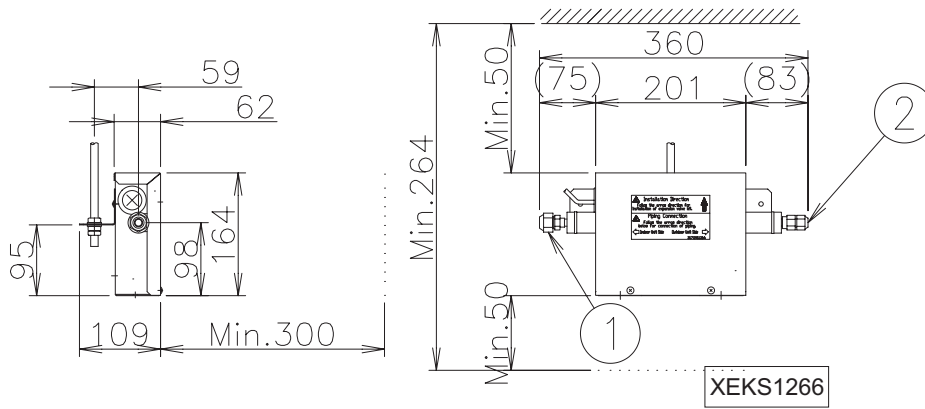
◆ RPK-(2.0-4.0)FSN3M - Wall type



No.	Description	No.	Description
1	Fan	10	Drain Pipe Connection
2	Fan Motor	11	Auto Louver Motor
3	Heat Exchanger	12	Drain Pan
4	Strainer	13	Air Filter
5	Micro-Computer Control Expansion Valve	14	Air Outlet
6	Electrical Control Box	15	Air Inlet
7	Bearing	16	Receiver Part
8	Refrigerant Gas Pipe Connection	17	Distributor
9	Refrigerant Liquid Pipe Connection		

All measurements are in mm.

◆ Expansion valve kit EV-1.5N1

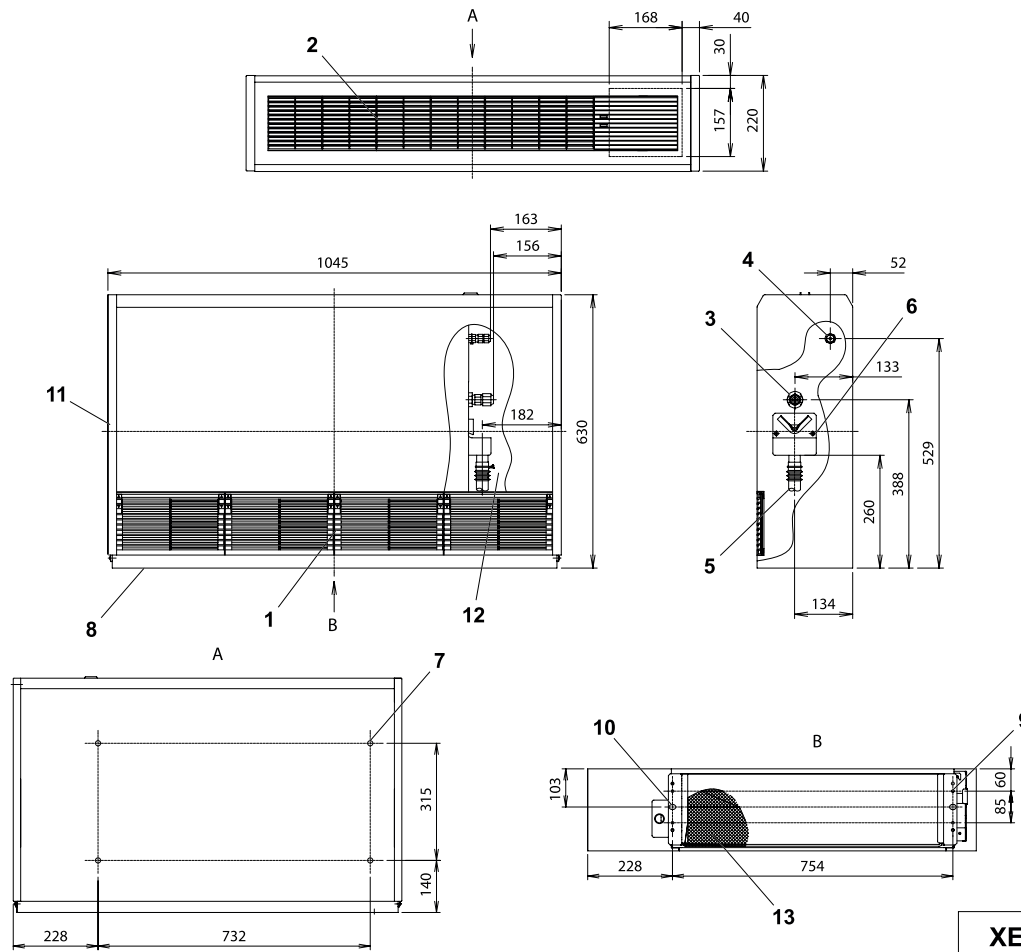


No.	Description	Remarks
1	Refrigerant liquid pipe connection (indoor unit side)	With $\phi 9.53$ flare nut
2	Refrigerant liquid pipe connection (outdoor unit side)	With $\phi 6.35$ flare nut

All measurements are in mm.

7.1.9 RPF-(1.0-2.5)FSN2E - Floor type

◆ **RPF-1.0FSN2E - Floor type**

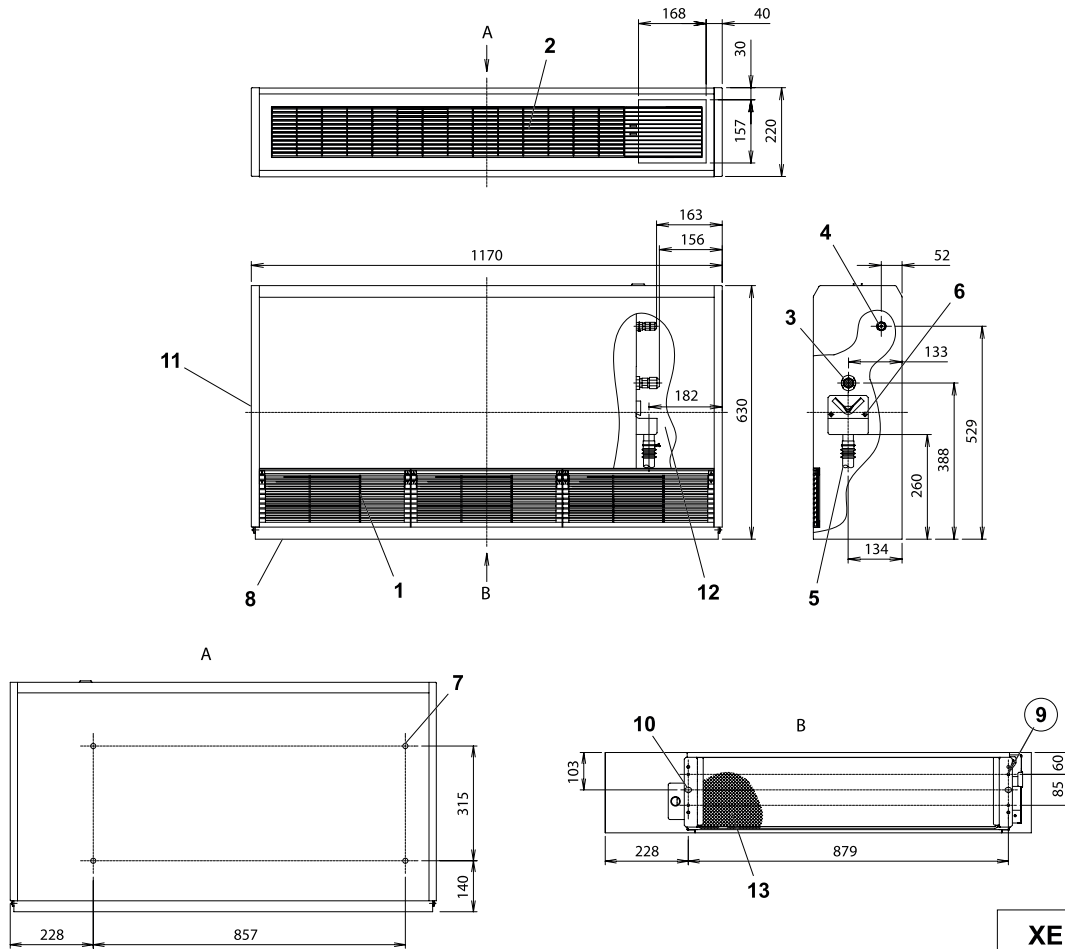


XEKS1237

No.	Description	Remarks
1	Air inlet	
2	Air outlet	
3	Refrigerant connection (gas)	Flare nut. ϕ 12.7
4	Refrigerant connection (liquid)	Flare nut. ϕ 6.35
5	Drain connection	
6	Drain pan	
7	Holes to fix the unit to the wall	(4x) ϕ 14 (behind)
8	Adjusting screw	For the installation
9	Holes to fix the unit to the floor	(4x) ϕ 7, bolts for wood (4x) M5
10	Holes to fix the unit to the floor	(2x) ϕ 12.5x18, bolts (2x) M8
11	Wiring hole	Left-hand side
12	Space for pipe connection	Right-hand side
13	Filter	

All measurements are in mm.

◆ **RPF-1.5FSN2E - Floor type**



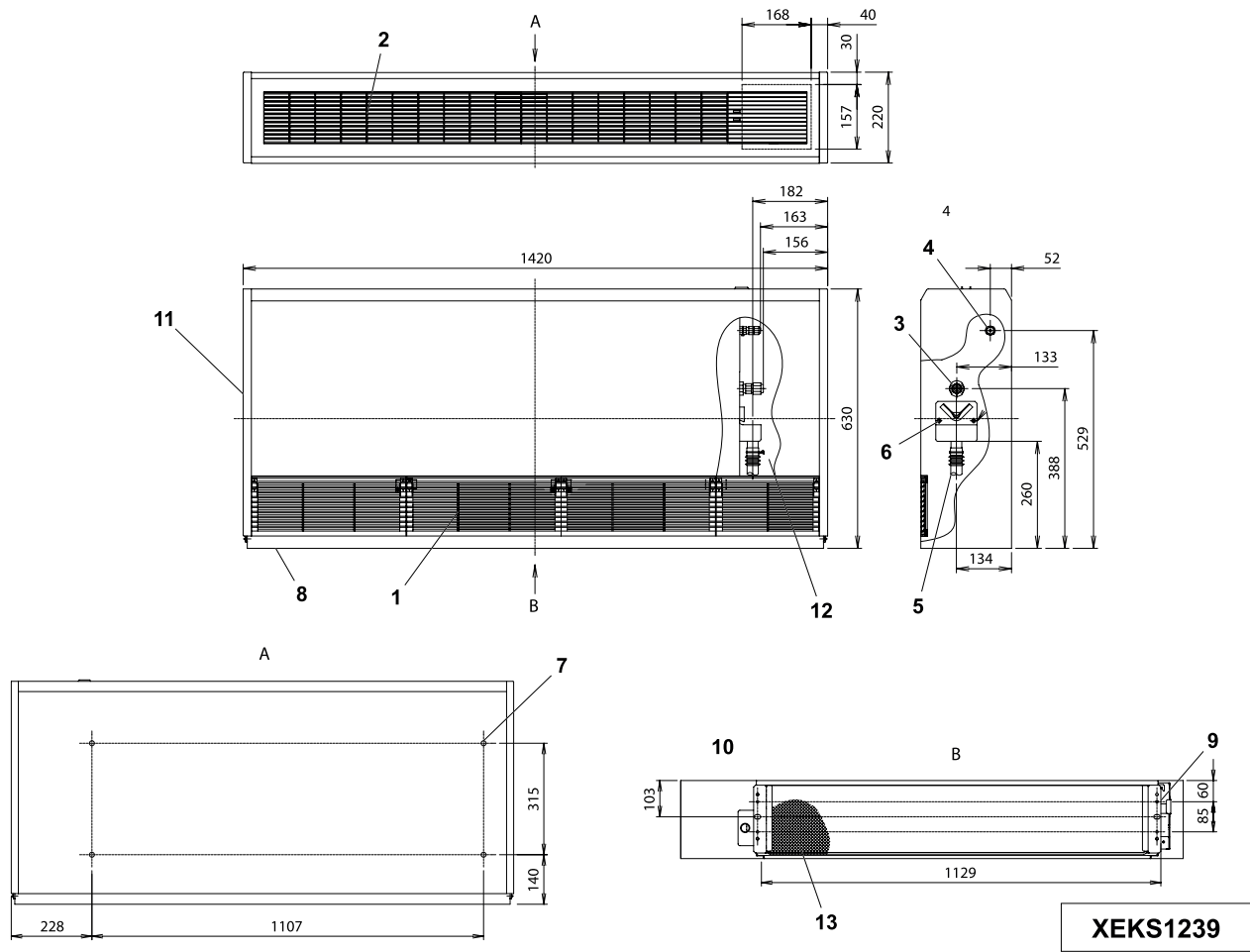
XEKS1238



No.	Description	Remarks
1	Air inlet	
2	Air outlet	
3	Refrigerant connection (gas)	Flare nut. ϕ 12.7
4	Refrigerant connection (liquid)	Flare nut. ϕ 6.35
5	Drain connection	
6	Drain pan	
7	Holes to fix the unit to the wall	(4x) ϕ 14 (behind)
8	Adjusting screw	For the installation
9	Holes to fix the unit to the floor	(4x) ϕ 7, bolts for wood (4x) M5
10	Holes to fix the unit to the floor	(2x) ϕ 12.5x18, bolts (2x) M8
11	Wiring hole	Left-hand side
12	Space for pipe connection	Right-hand side
13	Filter	

All measurements are in mm.

◆ RPF-(2.0/2.5)FSN2E - Floor type

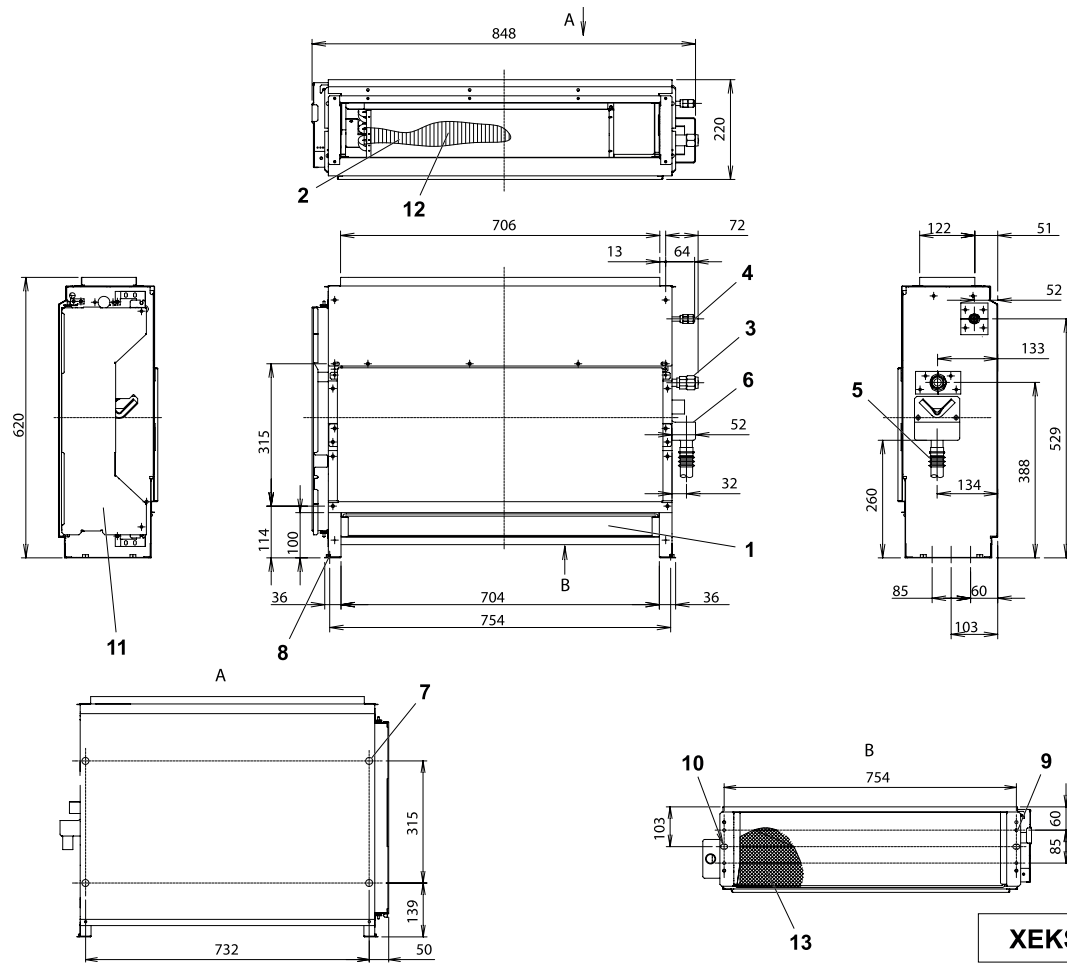


No.	Description	Remarks
1	Air inlet	
2	Air outlet	
3	Refrigerant connection (gas)	Flare nut. $\varnothing 15.88$
4	Refrigerant connection (liquid)	Flare nut. $\varnothing 6.35$ RPF-(2.0), $\varnothing 9.53$ RPF-(2.5)
5	Drain connection	
6	Drain pan	
7	Holes to fix the unit to the wall	(4x) $\varnothing 14$ (behind)
8	Adjusting screw	For the installation
9	Holes to fix the unit to the floor	(4x) $\varnothing 7$, bolts for wood (4x) M5
10	Holes to fix the unit to the floor	(2x) $\varnothing 12.5 \times 18$, bolts (2x) M8
11	Wiring hole	Left-hand side
12	Space for pipe connection	Right-hand side
13	Filter	

All measurements are in mm.

7.1.10 RPFI-(1.0-2.5)FSN2E - Floor concealed type

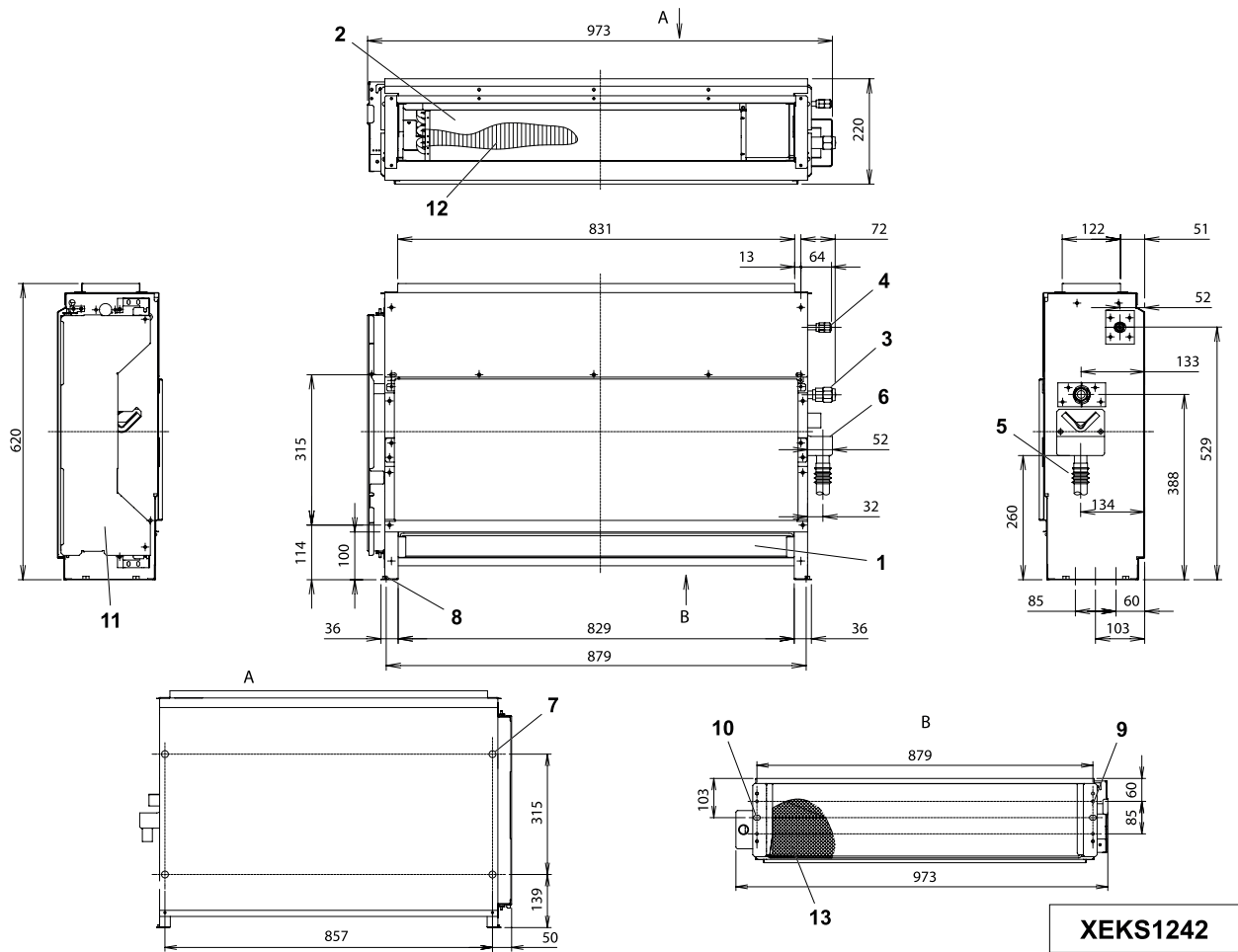
◆ **RPFI-1.0FSN2E - Floor concealed type**



No.	Description	Remarks
1	Air inlet	
2	Air outlet	
3	Refrigerant connection (gas)	Flare nut. ϕ 12.7
4	Refrigerant connection (liquid)	Flare nut. ϕ 6.35
5	Drain connection	
6	Drain pan	
7	Holes to fix the unit to the wall	(4x) ϕ 14 (behind)
8	Adjusting screw	For the installation
9	Holes to fix the unit to the floor	(4x) ϕ 7, bolts for wood (4x) M5
10	Holes to fix the unit to the floor	(2x) ϕ 12.5x18, bolts (2x) M8
11	Electrical box	
12	Evaporator	
13	Filter	

All measurements are in mm.

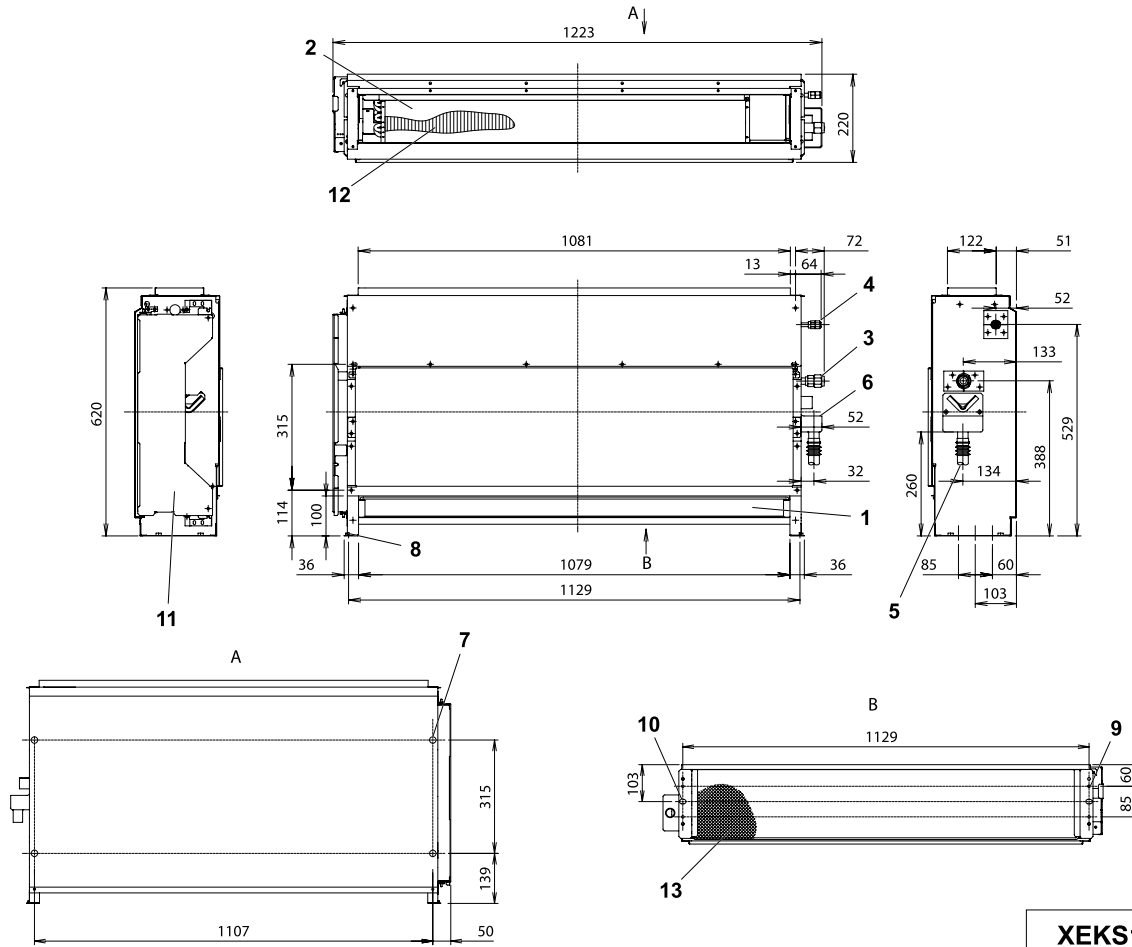
◆ **RPFI-1.5FSN2E - Floor concealed type**



No.	Description	Remarks
1	Air inlet	
2	Air outlet	
3	Refrigerant connection (gas)	Flare nut. $\phi 12.7$
4	Refrigerant connection (liquid)	Flare nut. $\phi 6.35$
5	Drain connection	
6	Drain pan	
7	Holes to fix the unit to the wall	(4x) $\phi 14$ (behind)
8	Adjusting screw	For the installation
9	Holes to fix the unit to the floor	(4x) $\phi 7$, bolts for wood (4x) M5
10	Holes to fix the unit to the floor	(2x) $\phi 12.5 \times 18$, bolts (2x) M8
11	Electrical box	
12	Evaporator	
13	Filter	

All measurements are in mm.

◆ **RPFI-(2.0/2.5)FSN2E - Floor concealed type**



XEKS1243

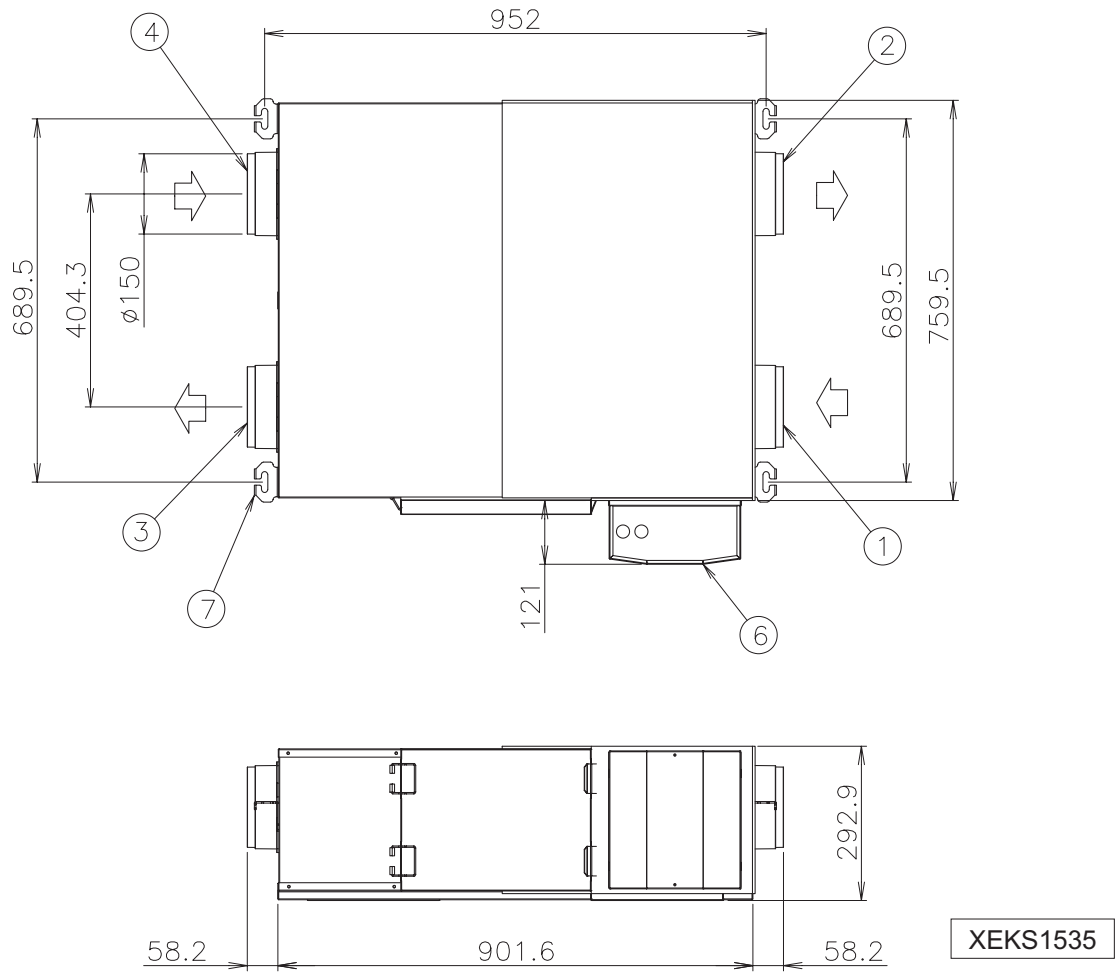


No.	Description	Remarks
1	Air inlet	
2	Air outlet	
3	Refrigerant connection (gas)	Flare nut. $\phi 15.88$
4	Refrigerant connection (liquid)	Flare nut. $\phi 6.35$ RPFI-(2.0), $\phi 9.53$ RPFI-(2.5)
5	Drain connection	
6	Drain pan	
7	Holes to fix the unit to the wall	(4x) $\phi 14$ (behind)
8	Adjusting screw	For the installation
9	Holes to fix the unit to the floor	(4x) $\phi 7$, bolts for wood (4x) M5
10	Holes to fix the unit to the floor	(2x) $\phi 12.5 \times 18$, bolts (2x) M8
11	Electrical box	
12	Evaporator	
13	Filter	

All measurements are in mm.

7.1.11 KPI-(252-2002)(E/H/X)3E - Energy / heat recovery and active energy recovery ventilation units

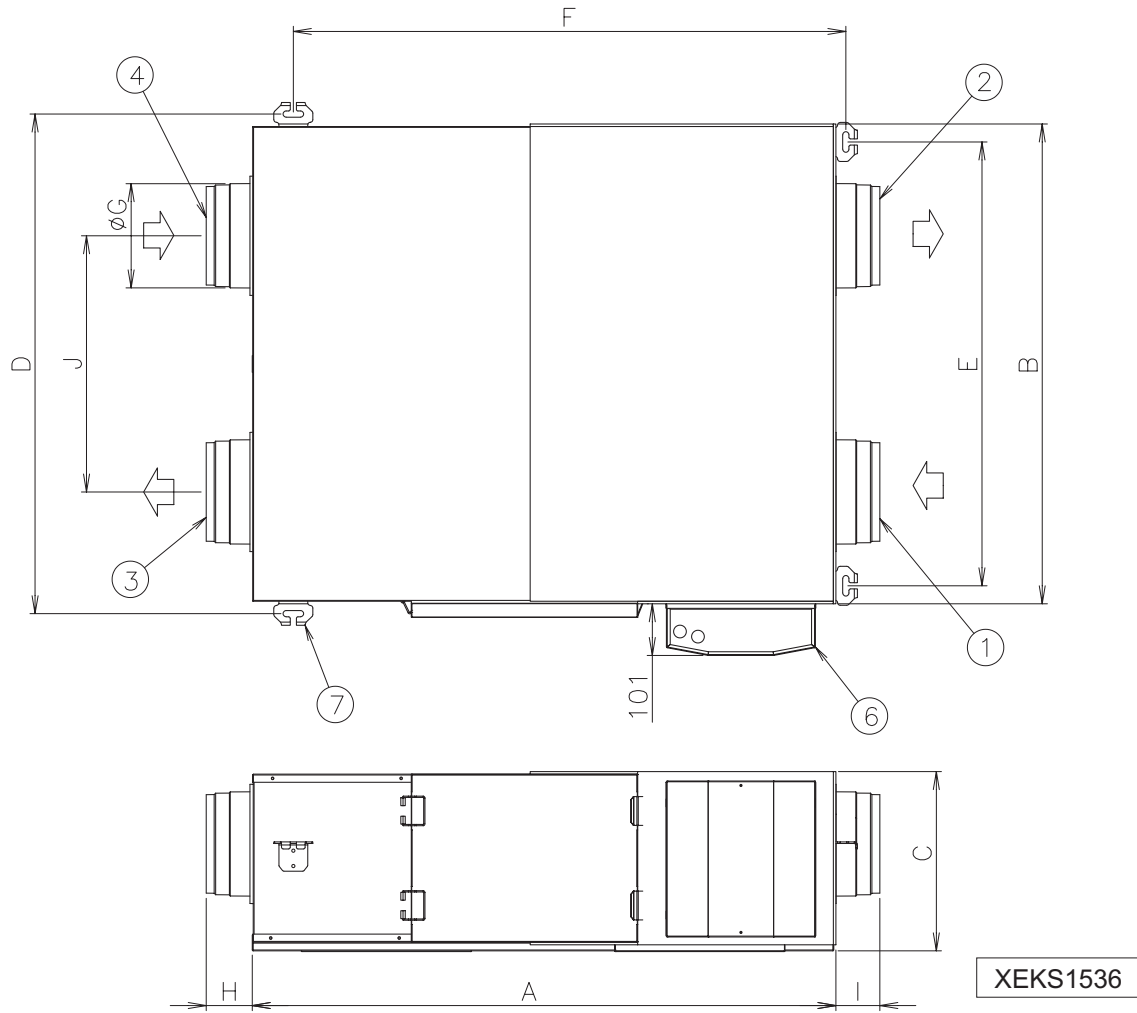
◆ **KPI-252(E/H)2E - Energy / heat recovery unit**



No.	Description	Remarks
1	Outdoor air	Fresh air inlet from outdoors
2	Exhaust air	Exhaust air outlet to outdoors
3	Air supply	Fresh air to the room
4	Return air	Exhaust air from the room
6	Electrical box	
7	Unit suspension bracket	(4x)

All measurements are in mm.

◆ KPI-(502-802)(E/H)2E - Energy / heat recovery unit

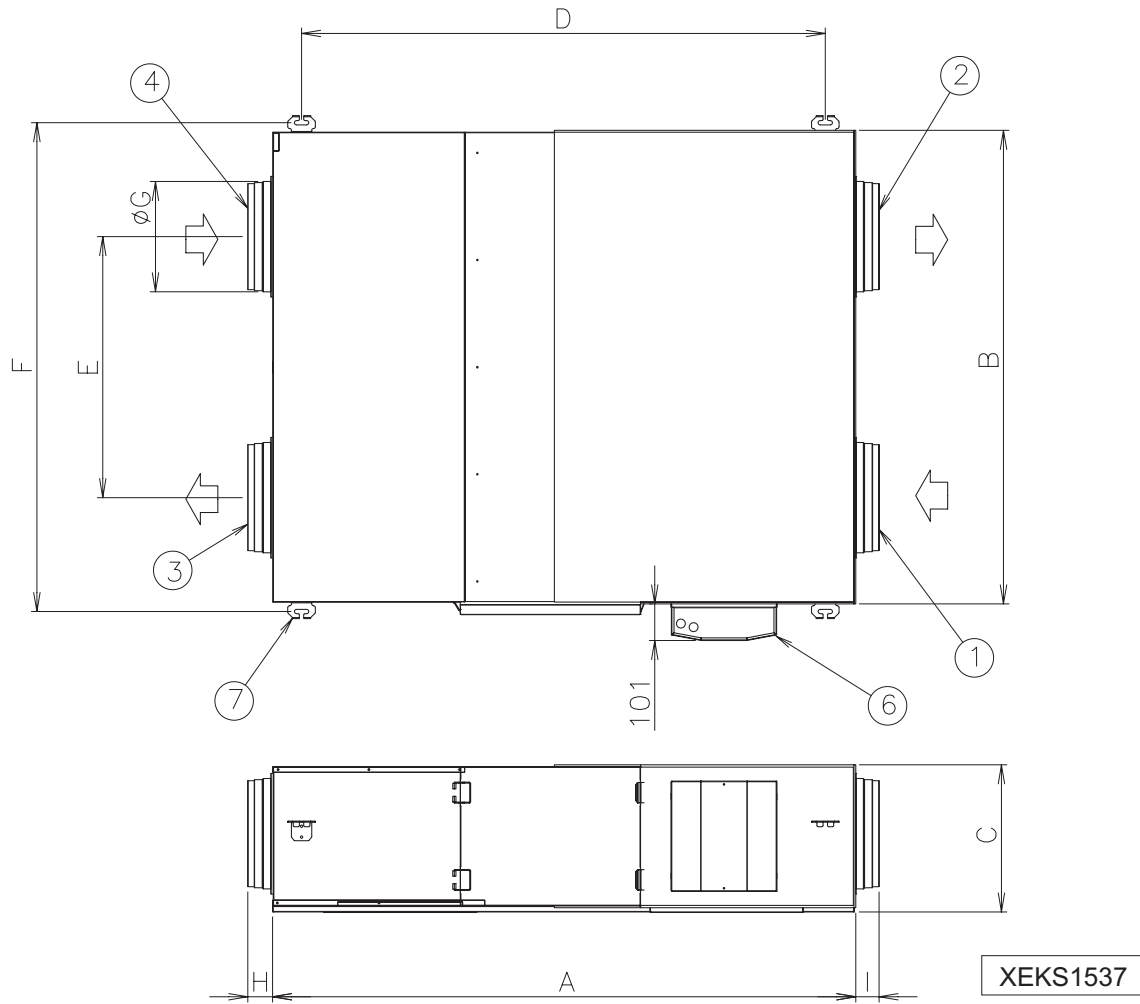


No.	Description	Remarks
1	Outdoor air	Fresh air inlet from outdoors
2	Exhaust air	Exhaust air outlet to outdoors
3	Air supply	Fresh air to the room
4	Return air	Exhaust air from the room
6	Electrical box	
7	Unit suspension bracket	(4x)

Models	A	B	C	D	E	F	G	H	I	J
KPI-502(E/H)3E	1136	934	249	972	864	1075	200	90	86	499
KPI-802(E/H)3E	1213	1024	405	1066	954	1165	250	90	86	589

All measurements are in mm.

◆ KPI-(1002-2002)(E/H)2E - Energy / heat recovery unit

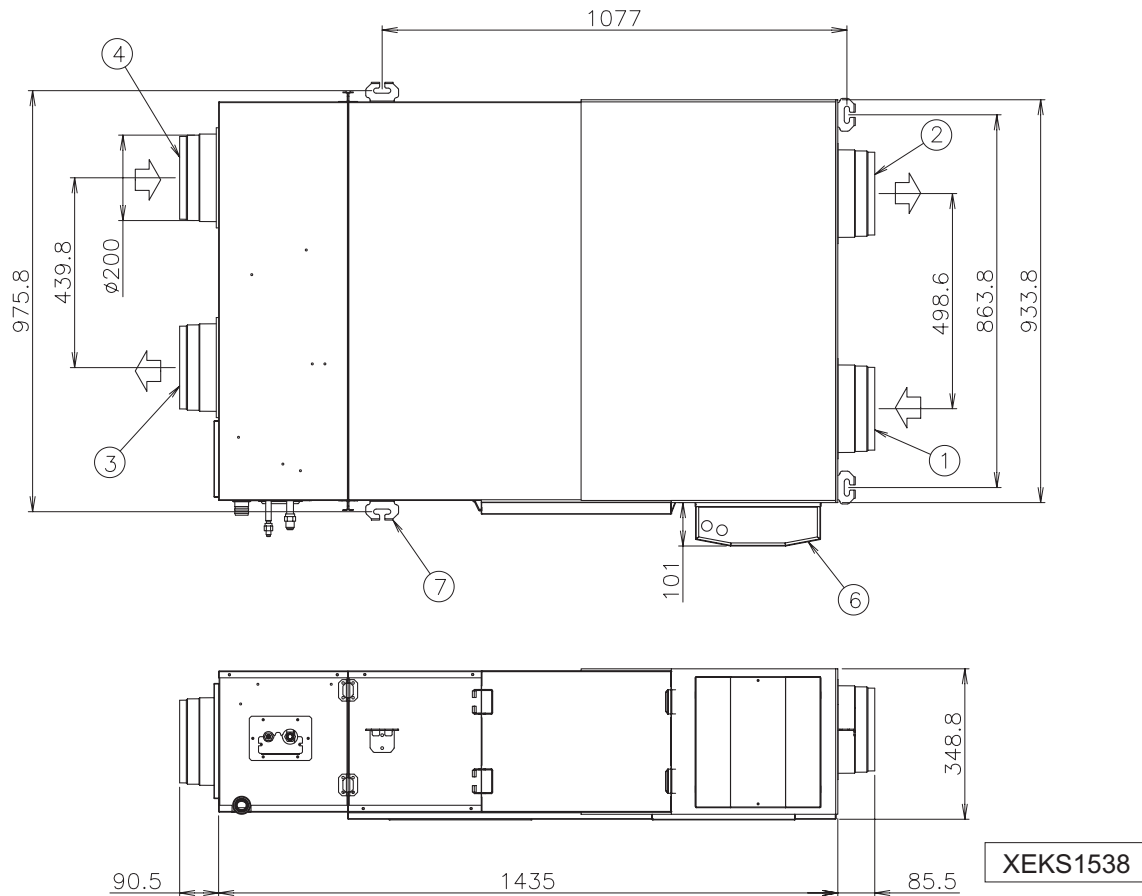


No.	Description	Remarks
1	Outdoor air	Fresh air inlet from outdoors
2	Exhaust air	Exhaust air outlet to outdoors
3	Air supply	Fresh air to the room
4	Return air	Exhaust air from the room
6	Electrical box	
7	Unit suspension bracket	(4x)

Models	A	B	C	D	E	F	G	H	I
KPI-1002(E/H)3E	1606	1304	405	1442	719	1346	300	68	64
KPI-1502(E/H)3E	1806	1138	547	1622	623	1180	355	90	86
KPI-2002(E/H)3E	1806	1438	547	1622	921	1480	355	90	86

All measurements are in mm.

◆ **KPI-502X3E - Active energy recovery ventilation units**

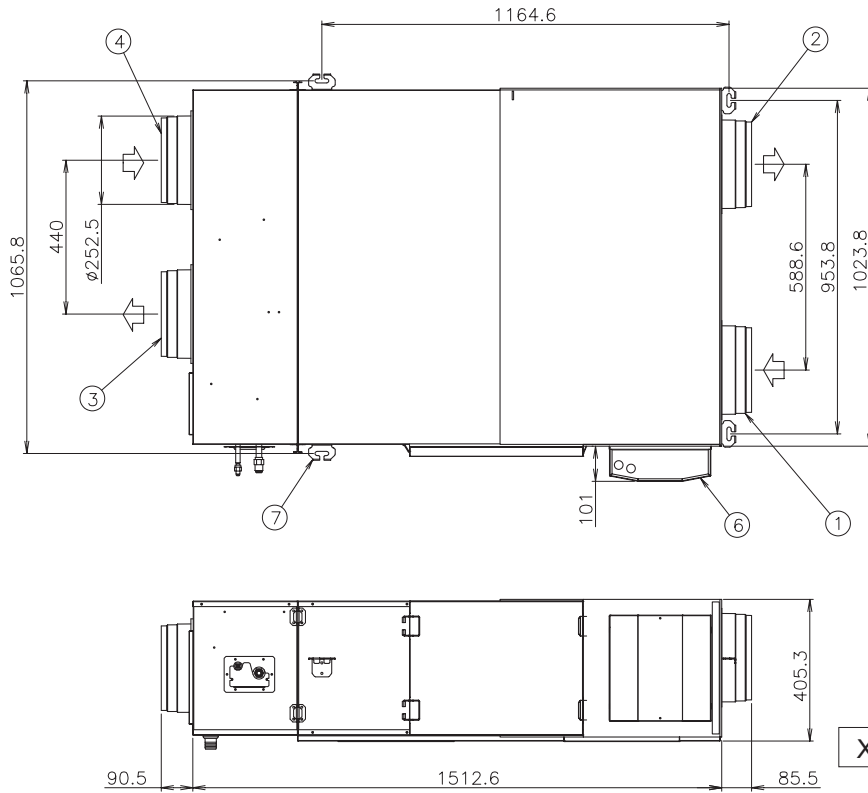


No.	Description	Remarks
1	Outdoor air	Fresh air inlet from outdoors
2	Exhaust air	Exhaust air outlet to outdoors
3	Air supply	Fresh air to the room
4	Return air	Exhaust air from the room
6	Electrical box	
7	Unit suspension bracket	(4x)

All measurements are in mm.



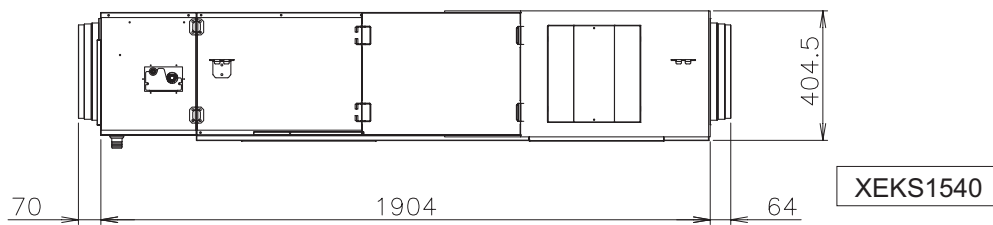
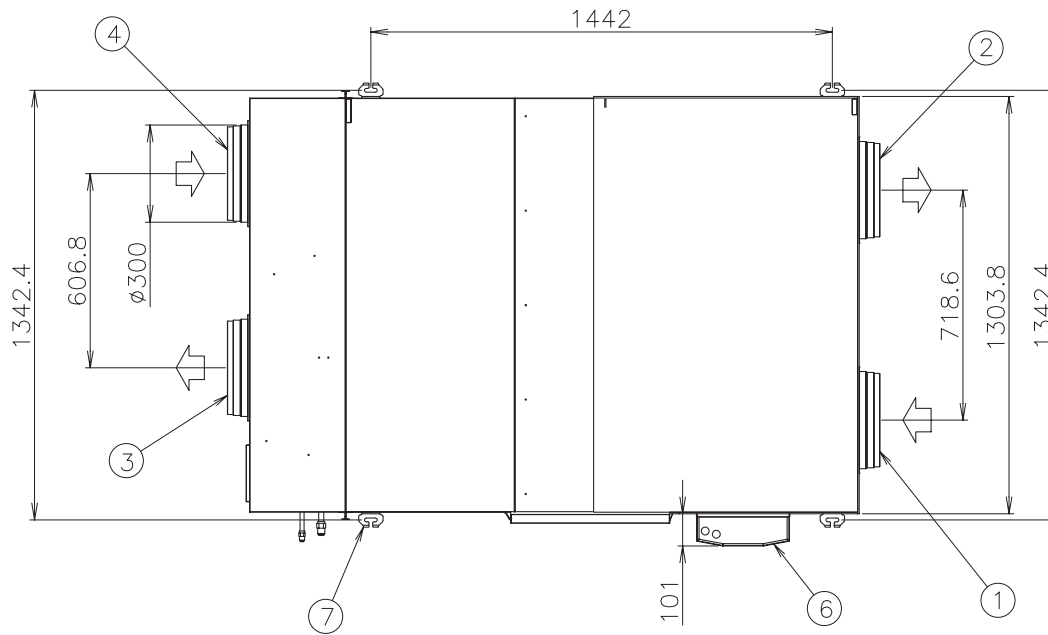
◆ **KPI-802X3E - Active energy recovery ventilation units**



No.	Description	Remarks
1	Outdoor air	Fresh air inlet from outdoors
2	Exhaust air	Exhaust air outlet to outdoors
3	Air supply	Fresh air to the room
4	Return air	Exhaust air from the room
6	Electrical box	
7	Unit suspension bracket	(4x)

All measurements are in mm.

◆ **KPI-1002X3E - Active energy recovery ventilation units**

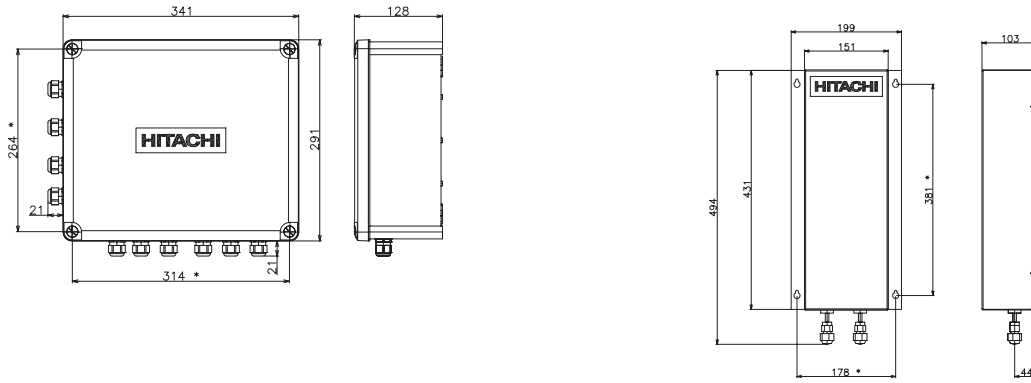


No.	Description	Remarks
1	Outdoor air	Fresh air inlet from outdoors
2	Exhaust air	Exhaust air outlet to outdoors
3	Air supply	Fresh air to the room
4	Return air	Exhaust air from the room
6	Electrical box	
7	Unit suspension bracket	(4x)

All measurements are in mm.



7.1.12 DX-Interface



(*) For installation.

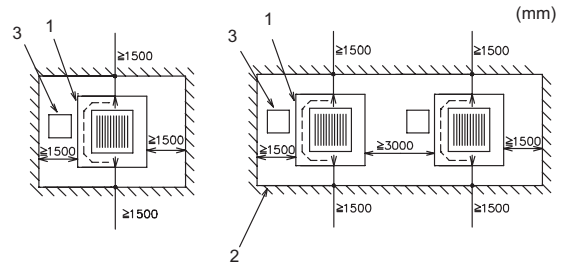
All measurements are in mm.

7.2 Service space

7.2.1 RCI-(1.0-6.0)FSN3 - 4-way cassette

Single installation

1. Piping connection.
2. Walls close to the unit.
3. Unit inspection and maintenance access.



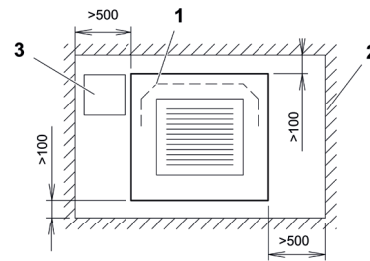
Combined installation

1. Piping connection.
2. Walls close to the unit.
3. Unit inspection and maintenance access.

7.2.2 RCI-(1.0-6.0)FSN3Ei - 4-way cassette

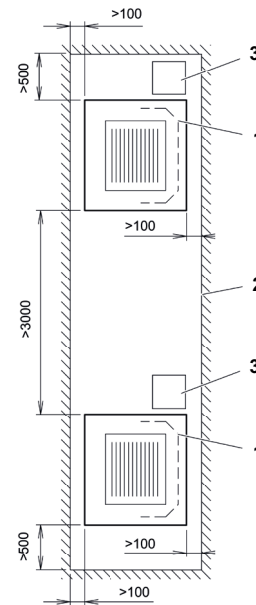
Single installation

1. Piping connection.
2. Walls close to the unit.
3. Unit inspection and maintenance access.



Combined installation

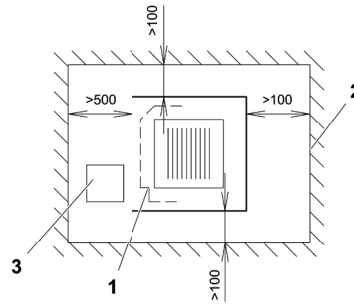
1. Piping connection.
2. Walls close to the unit.
3. Unit inspection and maintenance access.



7.2.3 RCIM-(0.8-2.0)FSN2 - 4-way cassette

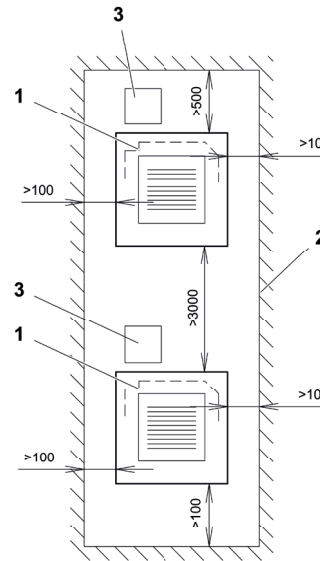
Single installation

1. Piping connection.
2. Walls close to the unit.
3. Unit inspection and maintenance access.



Combined installation

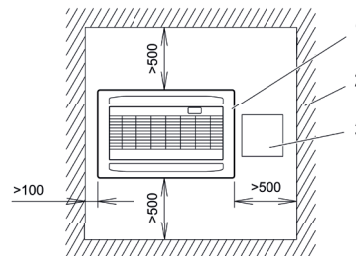
1. Piping connection.
2. Walls close to the unit.
3. Unit inspection and maintenance access.



7.2.4 RCD-(1.0-5.0)FSN2 - 2-way cassette

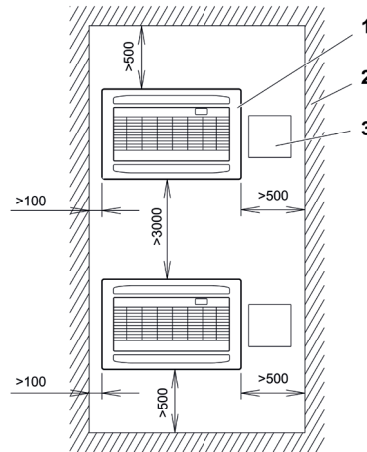
Single installation

1. Piping connection.
2. Walls close to the unit.
3. Unit inspection and maintenance access.

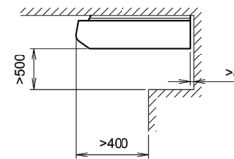
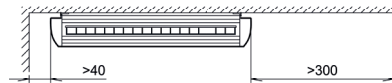


Combined installation

1. Piping connection.
2. Walls close to the unit.
3. Unit inspection and maintenance access.



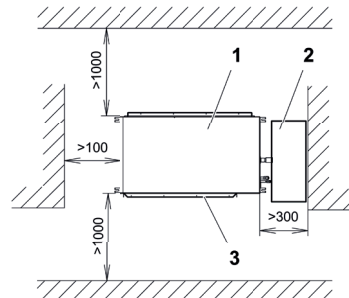
7.2.5 RPC-(2.0-6.0)FSN2E - Ceiling type



7.2.6 RPI-(0.8-10.0)FSN(3/4)E - Indoor ducted unit

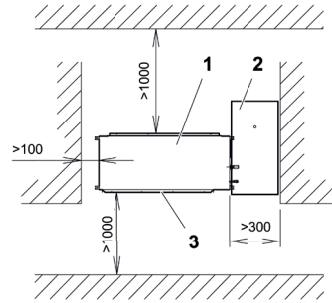
RPI-(0.8-1.5)FSN4E - Indoor ducted unit

1. Rear.
2. Unit inspection and maintenance access.
3. Front.



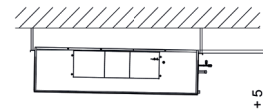
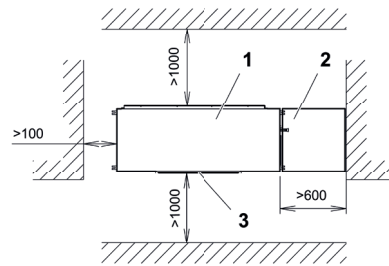
RPI-(2.0-6.0)FSN4E - Indoor ducted unit

1. Rear.
2. Unit inspection and maintenance access.
3. Front.



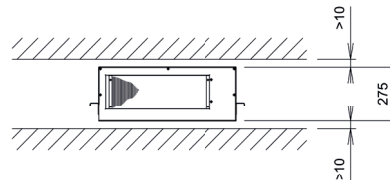
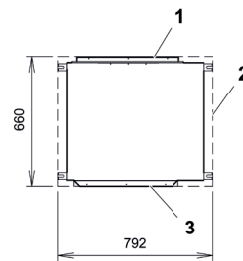
RPI-(8.0/10.0)FSN3E - Indoor ducted unit

1. Rear.
2. Unit inspection and maintenance access.
3. Front.



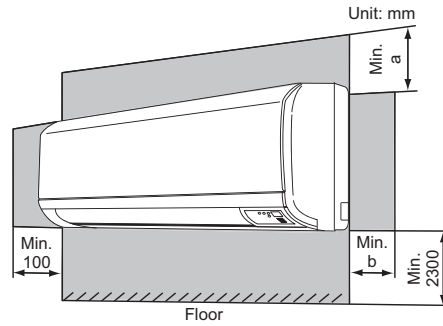
7.2.7 RPIM-(0.8-1.5)FSN4E(-DU) - Indoor ducted unit

1. Rear.
2. Unit inspection and maintenance access.
3. Front.



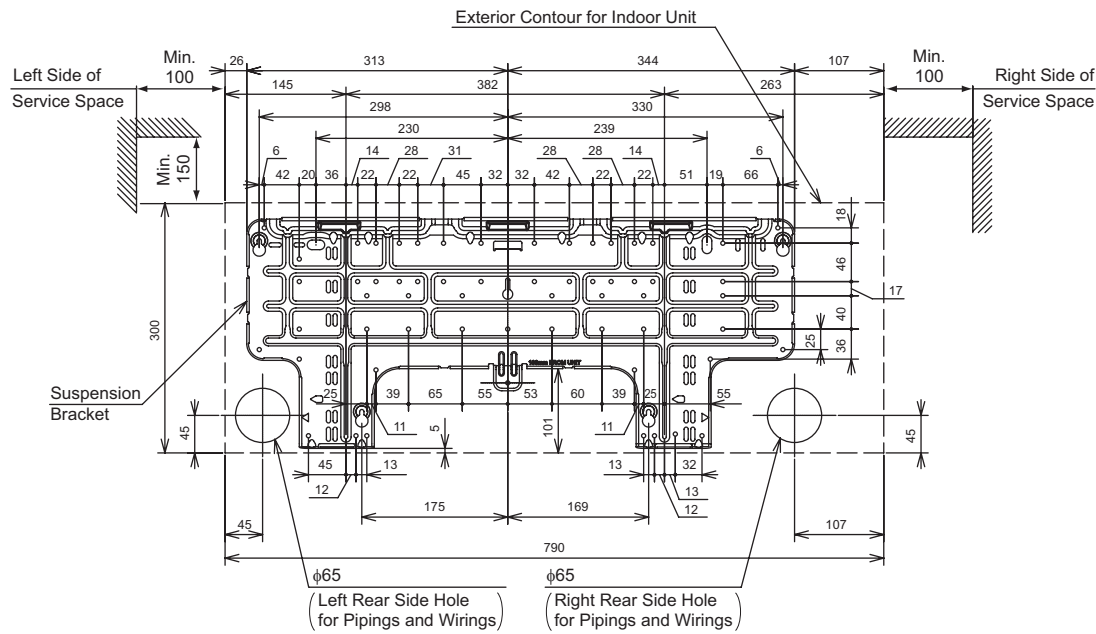
7.2.8 RPK-(0.8-4.0)FSN(H)3M - Wall type

HP	a	b
0.8-1.5	150	100
2.0-4.0	100	200



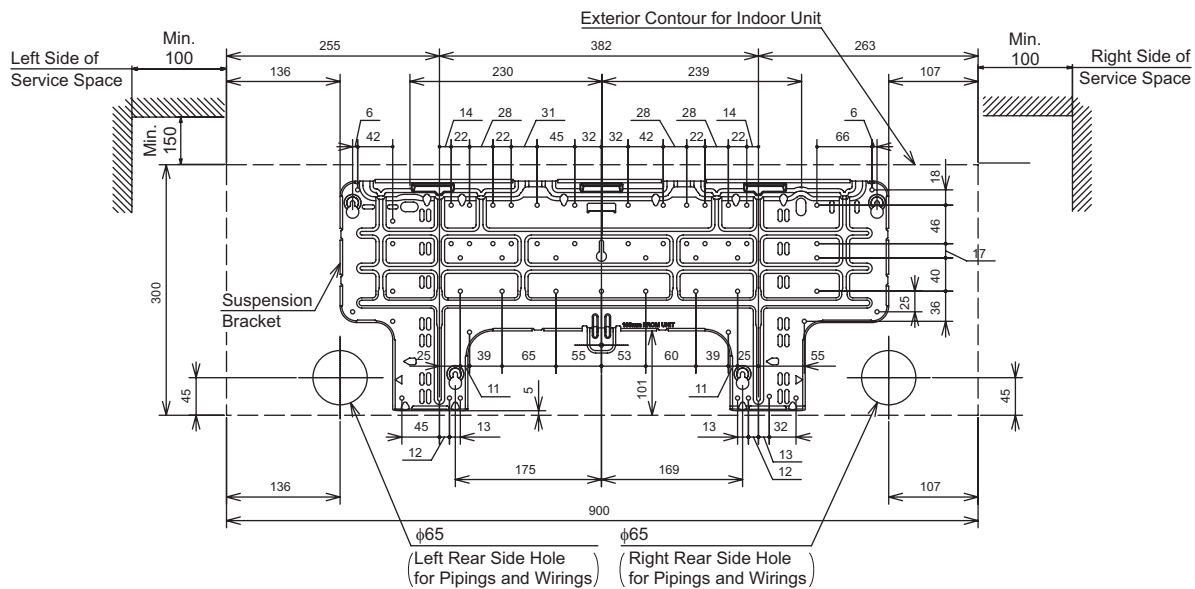
Unit suspension bracket - RPK-(0.8-1.0)FSN(H)3M

1. Outer contour of the unit.
2. Hole for gas pipes and connections (depending on the pipe outlet direction).



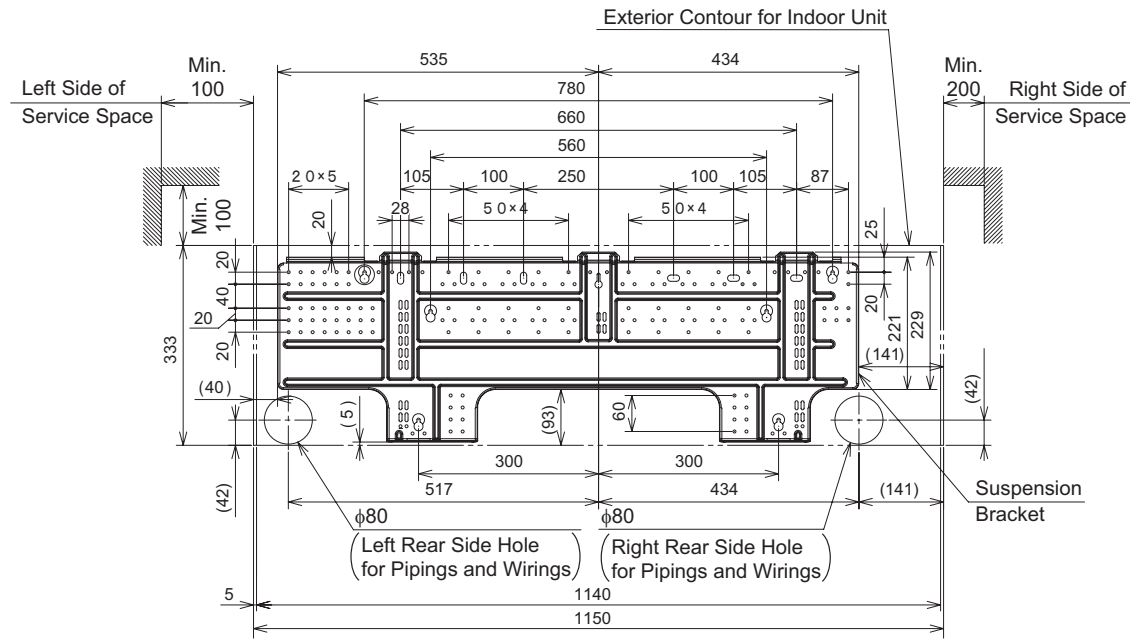
Unit suspension bracket - RPK-1.5FSN(H)3M

1. Outer contour of the unit.
2. Hole for gas pipes and connections (depending on the pipe outlet direction).

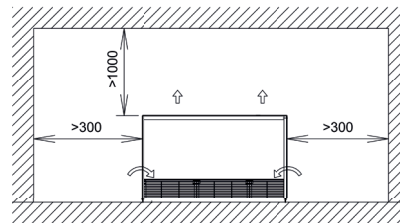


Unit suspension bracket - RPK-(2.0-4.0)FSN(H)3M

1. Outer contour of the unit.
2. Hole for gas pipes and connections (depending on the pipe outlet direction).

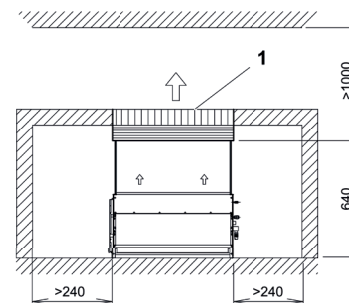


7.2.9 RPF-(1.0-2.5)FSN2E - Floor type

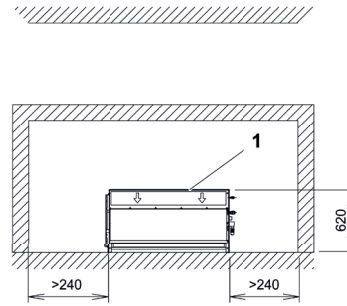


7.2.10 RPFI-(1.0-2.5)FSN2E - Floor concealed type

1. Vertical air outlet.

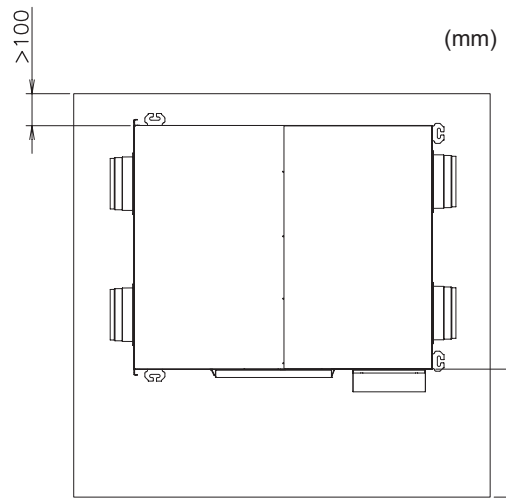


1. Horizontal air outlet.

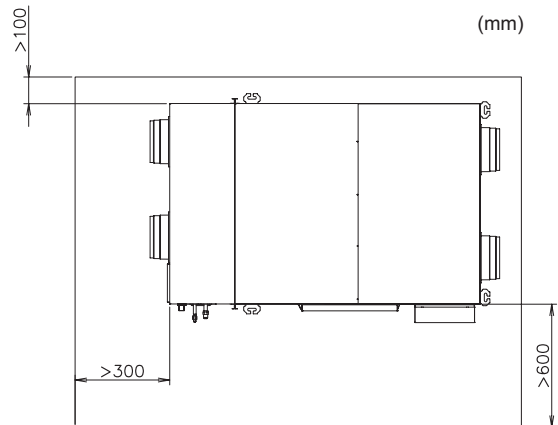


7.2.11 KPI-(252-2002)(E/H/X)3E - Energy / heat recovery and active energy recovery ventilation units

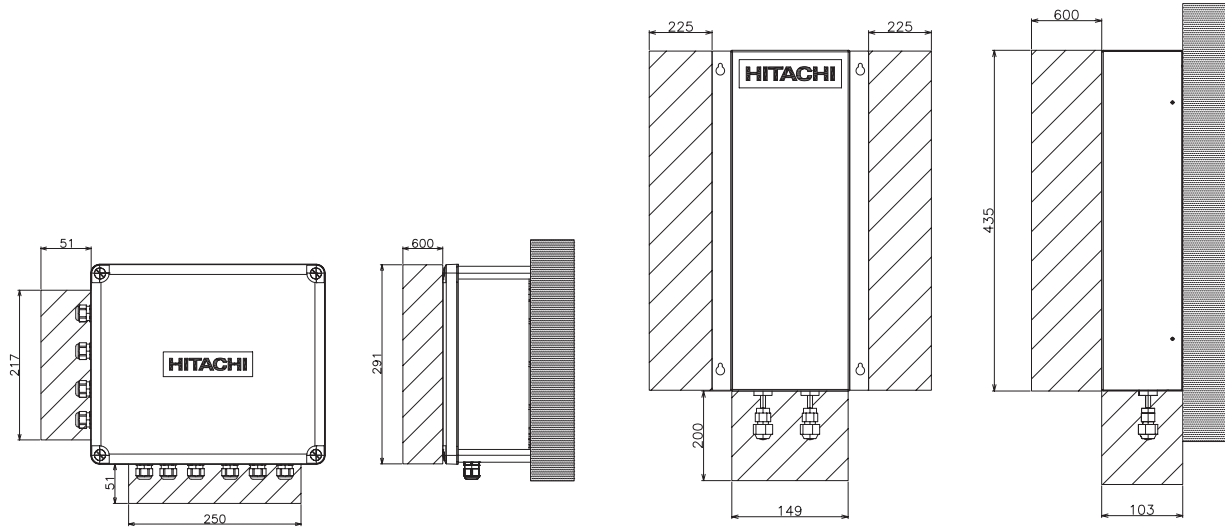
KPI-(252-2002)E3E/ KPI-(502-2002)H3E - Energy / heat recovery ventilation units



KPI-(502-1002)X3E - Active energy recovery ventilation units



7.2.12 DX-Interface



Minimum sizes (mm).

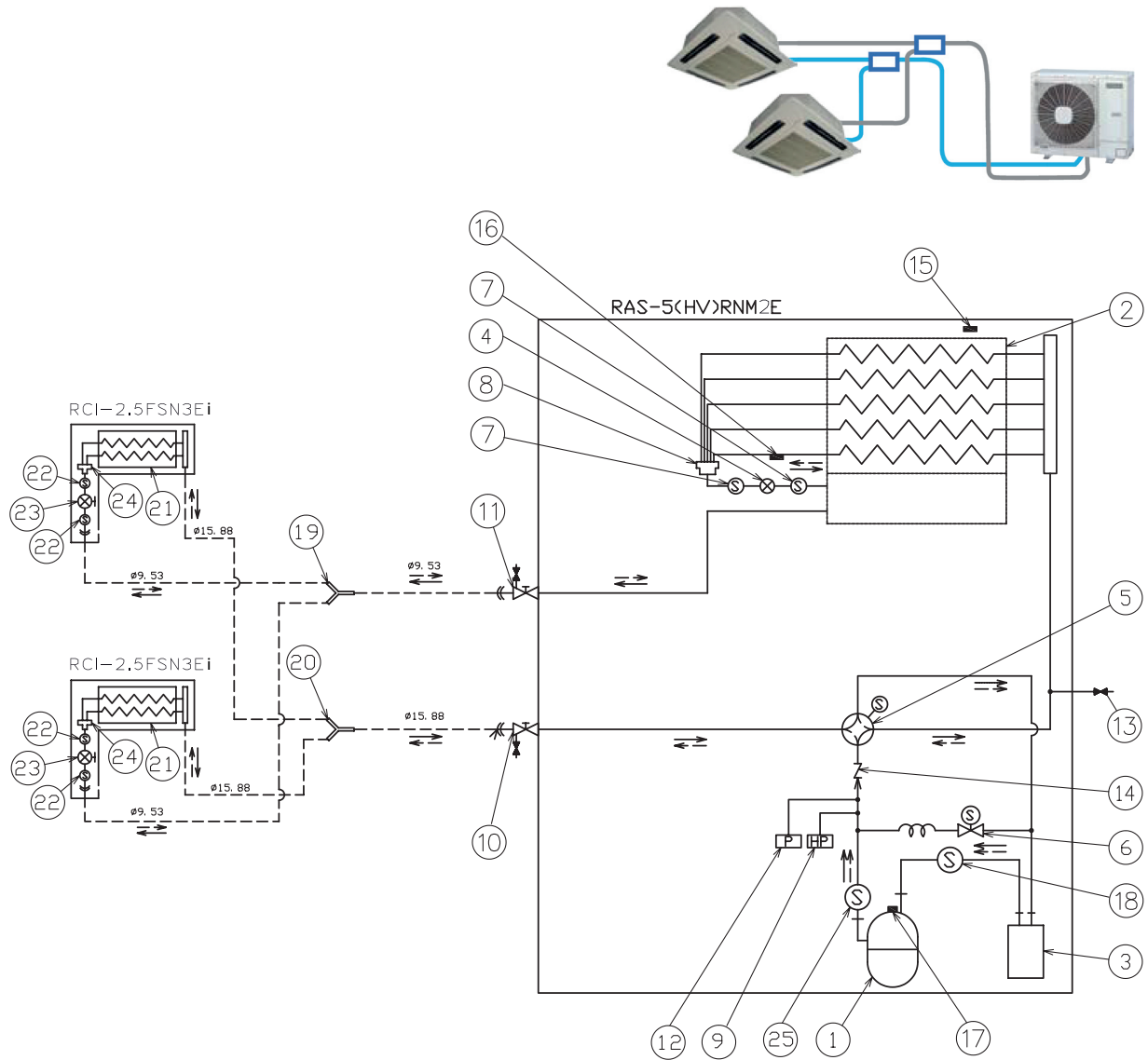
8. Refrigerant cycle

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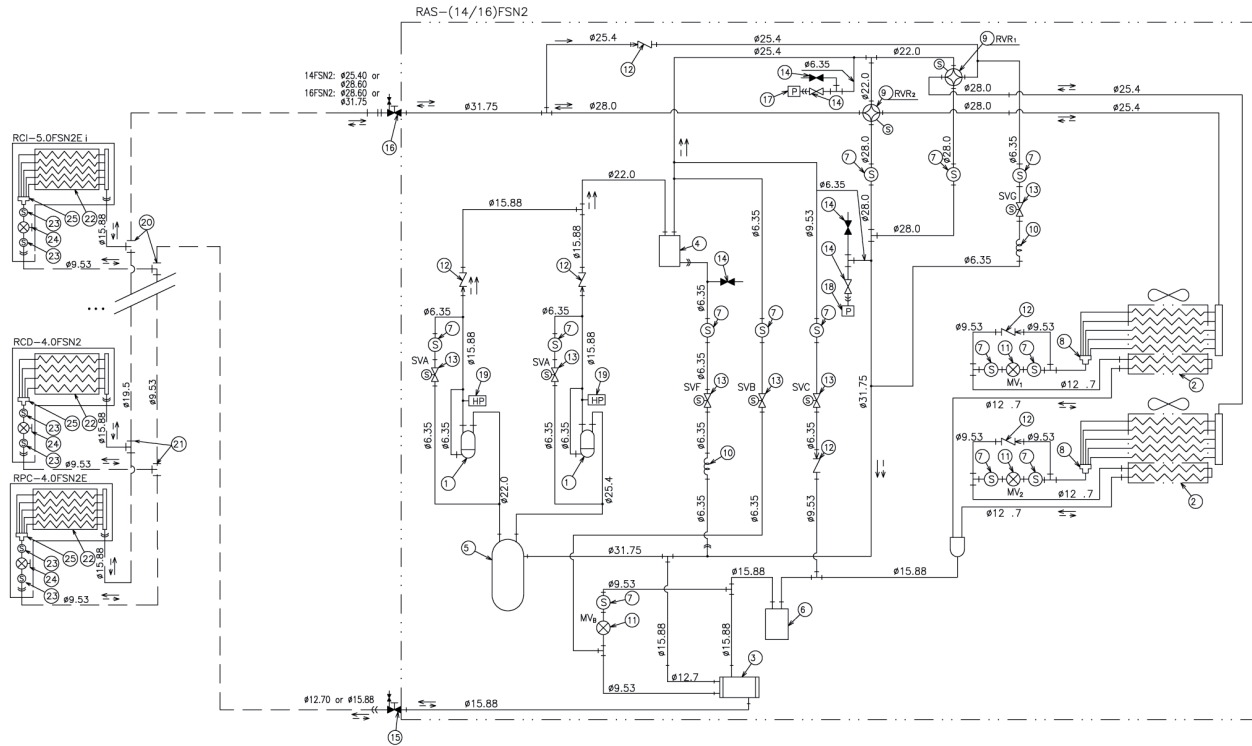


8.1 Example of twin combination



						R410A	4.15 MPa
Refrigerant flow for cooling	Refrigerant flow for heating	Installation refrigeration pipe	Connection by flare nut	Connection by flange	Connection by welding	Gas refrigerant	Leakage test pressure
No.	Part name	No.	Part name	No.	Part name		
1	Compressor	9	High pressure switch for protection	17	Gas discharge thermistor		
2	Outdoor unit Heat exchanger	10	Gas pipe stop valve	18	Receiver		
3	Strainer	11	Liquid pipe stop valve	19	Indoor unit Heat exchanger		
4	Expansion valve	12	Pressure switch (control)	20	Strainer		
5	Reversing valve	13	Silencer	21	Expansion valve		
6	Strainer	14	Accumulator	22	Distributor		
7	Distributor	15	Ambient thermistor				
8	Check joint	16	Evaporator pipe thermistor				

8.2 Example of triple combination



						R410A	4.15 MPa
Refrigerant flow for cooling	Refrigerant flow for heating	Installation refrigeration pipe	Connection by flare nut	Connection by flange	Connection by welding	Gas refrigerant	Leakage test pressure

No.	Part name	No.	Part name	No.	Part name
1	Compressor	10	Capillary tube	19	High pressure switch for protection
2	Heat exchanger	11	Expansion valve	20	Multikit MW-242AN
3	Heat exchanger	12	Check valve	21	Multikit MW-102AN
4	Oil separator	13	Solenoid valve SVA: pressure control. SVB: gas bypass. SVC: liquid bypass. SVF: oil return.	22	Indoor exchanger
5	Accumulator	14	Check connection	23	Filter
6	Receiver	15	Liquid pipe stop valve	24	Expansion valve
7	Filter	16	Gas pipe stop valve	25	Distributor
8	Distributor	17	High-pressure sensor		
9	Reversing valve	18	Low-pressure sensor		



9. Piping work and refrigerant charge

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9.1 Refrigerant

9.1.1 Refrigerant charge



For matters relating to the refrigerant charge in the installation, consult the Technical Catalogue and Service Manual corresponding to the outdoor units of the UTOPIA or SET-FREE systems.

9.1.2 Refrigerant piping selection



Consult the corresponding Technical Catalogue for outdoor units from the UTOPIA or SET FREE series for gas refrigerant pipe selection.

◆ Pipe size selection

Select the pipe size in line with the following instructions:

- 1 Between the outdoor unit and the branch pipe (multikit): select the same pipe connection size as for the outdoor unit.
- 2 Between the branch pipe (multikit) and the indoor unit: select the same pipe connection size as for the indoor unit.



- *Do not use refrigerant pipe sizes other than those indicated in the corresponding Technical Catalogue for outdoor units. The diameter of the refrigerant pipes depends directly on the power of the outdoor unit.*
- *If larger diameter refrigerant pipes are used, the circuit lubrication oil tends to separate from the gas carrying it. The compressor will be seriously damaged due to a lack of lubrication.*
- *If smaller diameter refrigerant pipes are used, the gas or liquid refrigerant will have serious difficulties in circulating. System performance will be affected. The compressor will run under more severe conditions than foreseen and will be damaged in a short space of time.*

◆ Selection of the multikit or distributor



- *Pipe connection size on outdoor units, indoor units and the multikit or distributor vary according to the system. Consult the Service Manual for the UTOPIA or SET FREE series.*
- *The sizes of the indoor and outdoor units are different. Adjust the flare adapter (accessory) to the indoor pipe connection.*

9.2 Multikits and distributors

9.2.1 UTOPIA: branch pipes (pipe kits)

Model	Gas pipe	Liquid pipe
TE-03N (*)		
TE-04N (*)		
TE-08N (*)		
TE-10N		
TE-56N		

All measurements are in mm.



NOTE

(*) For UTOPIA IVX Standard please use TE-03N1, TE-04N1 or TE-08N1 which are supplied with additional reducers.

9.2.2 UTOPIA: distributors

Model	Gas pipe	Liquid pipe
TRE-06N (*)		
TRE-810N (*)		
QE-810N (*)		

All measurements are in mm.



NOTE

(*) For UTOPIA IVX Standard please use TRE-06N1, TRE-810N1 or QE-810N1 which are supplied with additional reducers.

9.2.3 SET FREE: Multi-Kits and distributors

E-102SN2			
Gas line	Gas line reducer	Liquid line	Liquid line reducer

E-162SN2					
Gas line	Gas line reducer	Liquid line	Liquid line reducer		
E-242SN2					
Gas line	Gas line reducer	Liquid line	Liquid line reducer		
E-302SN2					
Gas line	Gas line reducer	Liquid line	Liquid line reducer		
E-52XN2					
Gas line (low pressure)	Gas line (high pressure)	Gas line reducer (low pressure)	Gas line reducer (high pressure)	Liquid line	Liquid line reducer

E-102XN2					
Gas line (low pressure)	Gas line (high pressure)	Gas line reducer (low pressure)	Gas line reducer (high pressure)	Liquid line	Liquid line reducer
E-162XN2					
Gas line (low pressure)	Gas line (high pressure)	Gas line reducer (low pressure)	Gas line reducer (high pressure)	Liquid line	Liquid line reducer
E-202XN2					
Gas line (low pressure)	Gas line (high pressure)	Gas line reducer (low pressure)	Gas line reducer (high pressure)	Liquid line	Liquid line reducer
E-242XN2					
Gas line (low pressure)	Gas line (high pressure)	Gas line reducer (low pressure)	Gas line reducer (high pressure)	Liquid line	Liquid line reducer
E-322XN2					
Gas line (low pressure)	Gas line (high pressure)	Gas line reducer (low pressure)	Gas line reducer (high pressure)	Liquid line	Liquid line reducer

MH-84AN					
Gas line	Expander for the gas line	Shut-off pipe for the gas line	Liquid line	Expander for the liquid line	Shut-off pipe for the liquid line
	-	 Quantity: 2		 Quantity: 4	 Quantity: 2
MH-108AN					
Gas line	Expander for the gas line	Shut-off pipe for the gas line	Liquid line	Expander for the liquid line	Shut-off pipe for the liquid line
	 Quantity: 2	 Quantity: 6		 Quantity: 8	 Quantity: 6

Key:

ID: inner diameter.

OD: outer diameter.

All measurements are in mm.

9.3 Copper pipes, sizes, connection and insulation

9.3.1 Copper pipes and sizes

CAUTION

- *The copper pipe used in the refrigeration installations is different to the copper pipe used in installations carrying domestic or heating water.*
- *The copper pipe for refrigeration installations is especially treated for outdoors and indoors. The interior surface finish makes it easier for the gas refrigerant to circulate and withstands the action of the lubricant oil applied to outdoor equipment.*

Prepare the copper pipes provided by the supplier.

Select the pipe with the appropriate diameter and thickness. Use the table below to select the most appropriate pipe:

Nominal diameter		Thickness mm	Supply
mm	Inches		
6.35	1/4	0.80	Roll
9.53	3/8	0.80	Roll
12.7	1/2	0.80	Roll
15.88	5/8	1.00	Roll
19.05	3/4	1.00	Pipe
22.2	7/8	1.00	Pipe
25.4	1	1.00	Pipe
28.6	1-1/8	1.00	Pipe

Always use clean copper pipes with no signs of knocks or cracks. Make sure there is no dust or dampness on the inside. Before you install the pipes, clean the inside with oxygen-free nitrogen gas to eliminate any remains of dust or other substances.

CAUTION

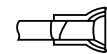
- *Do not use hand saws, circular saws, abrasive grinders or other tools that generate shavings.*
- *Strictly follow national or local regulations regarding occupational health and safety.*
- *Wear appropriate means of protection during cutting or welding operations and installation (gloves, eye protection, etc).*

9.3.2 Pipe connection

End of refrigerant pipe protected correctly.

Cover the end of the pipe appropriately when it is to be inserted through holes in walls and roofs, etc.

Keep the ends of the pipes covered while other installation work is being carried out to avoid the entry of dampness or dirt.



End of refrigerant pipe unprotected.

Do not place the pipes directly on the ground without appropriate protection or adhesive vinyl tape to cover the ends.

Where the pipe installation is not completed for a certain amount of time, weld the ends of the pipe to seal. Then fill with oxygen-free nitrogen gas through a Schrader valve to avoid the accumulation of damp and/or contamination due to dirt.



Secure the connection pipe as indicated in the image. Use the indoor unit's insulation.

A: flare nut on the indoor unit.

B: insulation on the pipe connection to the indoor unit using the insulating material supplied.

C: secure the insulation using the tie supplied or using suitable adhesive tape.

D: Installation refrigerant pipe.

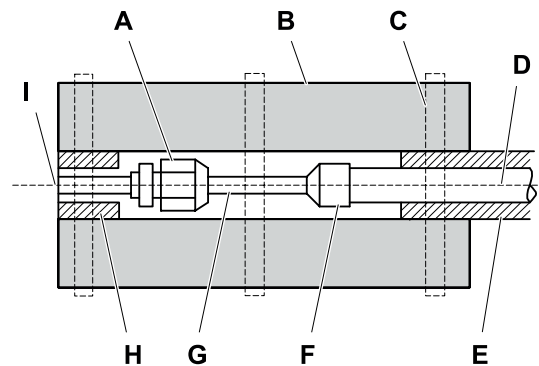
E: installation insulation (supplied by the fitter).

F: welding.

G: flare the pipe after inserting the flare nut.

H: indoor unit insulation.

I: indoor unit.



NOTE

- Where polyethylene foam insulation is used, a 10 mm thick layer should be used for the liquid pipe and between 15 and 20 mm for the gas pipe.
- Install the insulation after the pipe surface temperature has dropped to the same temperature as that of the room, otherwise the insulation may melt.

Do not use insulating material that contains NH_3 (ammonium), as it could damage the copper in the pipe and subsequently cause leaks.

Where the fitter has supplied his own branches, these should be appropriately insulated to avoid decreases in capacity in line with to environmental conditions and dew on the surface of the piping due to low pressure.

9.3.3 Insulation of the multikits and/or branches

Install the insulation package on the multikits and/or branches using suitable vinyl tape.

9.4 Precautions in the event of gas refrigerant leaks



DANGER

Fitters and those responsible for installation design must strictly abide by local and national regulations and local codes relating to safety requirements in the event of gas refrigerant leaks.

9.4.1 Maximum permitted hydrofluorocarbon (HFC) concentration

The gas refrigerant R410A included in the units is non-combustible and non-toxic.



DANGER

In the event of a leak, the gas spreads around the room and displaces the air, which could cause suffocation.

According to Standard EN378-1, the maximum permitted concentration of HFC R410A gas in the air is 0.44 kg/m³. Therefore, effective measures must be adopted to maintain the concentration of R410A gas in the air below 0.44 kg/m³ in the event of a leak.

9.4.2 Calculation of the concentration of gas refrigerant

- 1 Calculate the total quantity of refrigerant *R* (kg) charged in the system. To do so, connect all indoor units in the rooms in which air conditioning is to be provided.
- 2 Calculate the volume *V* (m³) of each room.
- 3 Calculate the refrigerant *C* (kg/m³) concentration in the room according to the following formula:

$$R / V = C$$

R: total quantity of refrigerant charged (kg).

V: volume of the room (m³).

C: gas refrigerant concentration (= 0.44 kg/m³ for R410A gas).

9.4.3 Countermeasures in the event of gas refrigerant leaks

The room must have the following characteristics should there be a gas refrigerant leak:

- 1 Opening with no outside shutter for fresh air circulation around the room.
- 2 Opening with no door to a size of 0.15% or above of the floor area.
- 3 A fan with a capacity of at least 0.4 m³/minute per ton of Japanese refrigeration (= volume moved by the compressor / 5.7 m³/h) or above, connected to a gas sensor in the air conditioning system that uses gas refrigerant.



DANGER

Pay special attention to places such as basements and similar where the gas refrigerant may lie and settle, as it is heavier than air.

10. Electrical wiring

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10.1 General instructions



CAUTION

- Turn off the main power switch on the indoor and outdoor unit prior to any wiring work or regular inspections.
- Make sure the indoor and outdoor fan have come to a complete standstill before carrying out any wiring work or regular inspections.
- Protect wires, drain pipe and electric parts, etc. from rodents and insects, as they could bite unprotected parts and even cause a fire.
- Prevent wires from touching the gas refrigerant pipes, metal edges, printed circuit boards (PCB) or electrical parts on the inside of the unit as the wires could be damaged and even cause a fire.
- Secure the wires firmly inside the indoor unit using plastic ties.



NOTE

Secure the rubber bushes with adhesive when the outdoor unit ducts are not used.

- 1 Make sure the electric components supplied by the fitter (main power switches, circuit breakers, wires, connectors and connection terminals) have been selected correctly in line with the electrical data given in Chapter *Indoor units*, see on page <?>.
- 2 Local or national regulations must be followed at all times during the preliminary work to prepare the electric power line for the equipment.



NOTE

For further information, consult the current regulations in the country where the unit is to be installed.

- 3 Check that the voltage is within the margin indicated in *Indoor units*, see on page <?>.
- 4 Check the electric power line capacity for the unit. Where the voltage capacity is too low, it will not be possible to start the system due to the drop in voltage.
- 5 Check that the earth cable is correctly connected.
- 6 The electrical power for the unit must involve an exclusive power control breaker and a protection differential, approved and installed in line with local or national safety regulations.

10.2 DIP switches settings and functions

10.2.1 Considerations



CAUTION

Disconnect the power supply before modifying the DIP switch settings. Otherwise the new settings will not be valid.



NOTE

The “■” mark indicates the position of the DIP switches. The figures show the position of the DIP switch once the position has been set.

10.2.2 Indoor units

◆ **DSW2: optional function setting (for RPK-FSN(H)3M only)**

Factory setting	Special 0.6 HP capacity setting ⁽¹⁾	Distinguish of indoor units using wireless remote control



NOTE

⁽¹⁾ Only available for RPK-0.8FSN3M unit used in combination with Set Free Mini series 2.

◆ **DSW3: capacity code setting**

No settings are required. This DIP switch with 4 or 6 switches (depending on Indoor Units) is used to set the capacity code corresponding to the power of the indoor unit.

Indoor Unit capacity 1.5 HP, 2 HP and 2.5 HP can be set to a lower capacity (1.3 HP, 1.8 HP and 2.3 HP) using the DIP switch.

Power (HP)						
0.8	1.0	1.3 ^(*)	1.5	1.8 ^(*)	2.0	2.3 ^(*)
Power (HP)						
2.5	3.0	4.0	5.0	6.0	8.0	10.0



NOTE

^(*) Capacity available with DIP switch setting.

In those model with switch number 5 and 6, both switches are not used.

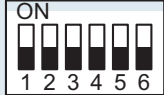

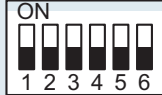

Follow the instructions given in the Service Manual.

◆ **DSW4: unit model code setting (not for RCI, RCIM and RPK)**

No settings are required. This DIP switch is used to set the model code corresponding to the type of indoor unit. Follow the instructions given in the Service Manual.

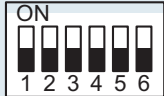

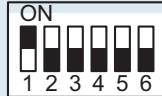

◆ **DSW5 and RSW2: refrigerant cycle number setting**

It is required to change factory default setting, with a value of up to 63. In the same refrigerant cycle, set the same refrigerant cycle number for the outdoor unit and the indoor unit.

Factory setting		Example of system setting with a value of: 5	
DSW5	RSW2	DSW5	RSW2
			



◆ **DSW6 and RSW1: Unit no. setting**

It is required to change factory default setting, with any value from 0 up to 63. The number allocated to each indoor unit must be set as standard. Follow the instructions given in the Service Manual.

Factory setting		Example of system setting with a value of: 16	
DSW6	RSW1	DSW6	RSW1
			




◆ **DSW7: fuse recovery**

No settings are required.

	All models
Factory setting	
In case of applying high voltage to the terminal 1-2 of TB (Transmitting wires), the fuse on the PCB is cut. In such a case, firstly correct the wiring to TB and then turn ON switch 1 (as showing beside).	

◆ **DSW8**

No settings are required.




	Only: RCD-FSN2E, RPI(M)(0.8-1.5) FSN4E, RPI-(8.0-10.0)FSN3E	Only: RCIM-FSN2
Factory setting		
Special 0.6 HP capacity setting ⁽¹⁾	Not used	

 **NOTE**

⁽¹⁾ Only available for RCIM-0.8FSN2 unit used in combination with Set Free Mini series 2.

◆ **DSW9**

No settings are required.

	Only for RCI-FSN3, RCI-FSN3Ei	Only for RPI(M)-(0.8-1.5)FSN4E
Factory setting		
Special 0.6 HP capacity setting ⁽¹⁾	Not used	

 **NOTE**

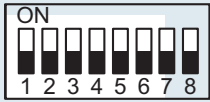
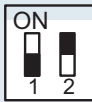
⁽¹⁾ Only available for RCIM-0.8FSN2 unit used in combination with Set Free Mini series 2.

10.2.3 Complementary systems

◆ **KPI units**

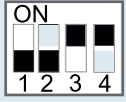
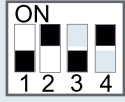

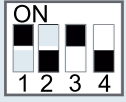
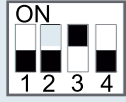
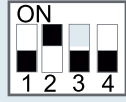
◆ **DSW1 and DSW2**

No settings are required.

DSW1	DSW2
All units	All units
	

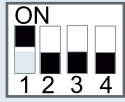
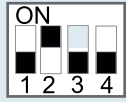
◆ **DSW3: capacity code setting**

No setting is required, due to setting before shipment. This dip switch is utilized for setting the capacity code.

DSW3					
KPI-252	KPI-502	KPI-802	KPI-1002	KPI-1502	KPI-2002
					

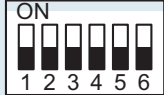

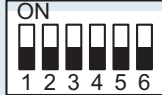

◆ **DSW4: unit model code setting**

No settings are required. This DIP switch is used to set the model code corresponding to the type of indoor unit. Follow the instructions given in the Service Manual.

DSW3	
KPI (E3/H3E)	Active KPI (X3E)
	

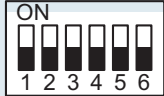

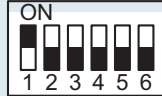

◆ **DSW5 and RSW2: refrigerant cycle number setting**

It is required to change factory default setting, with a value of up to 63. In the same refrigerant cycle, set the same refrigerant cycle number for the outdoor unit, indoor unit and KPI unit.

Factory setting		Example of system setting with a value of: 5	
DSW5	RSW2	DSW5	RSW2
			



◆ **DSW6 and RSW1: Unit no. setting**

It is required to change factory default setting, with any value from 0 up to 63. The number allocated to each KPI unit must be set as standard. Follow the instructions given in the Service Manual.

Factory setting		Example of system setting with a value of: 16	
DSW6	RSW1	DSW6	RSW1
			

◆ **DSW7: fuse recovery**

No settings are required.

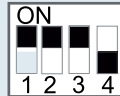
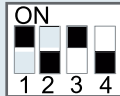
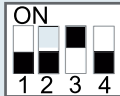
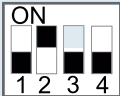


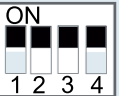
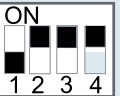
Factory setting		All models (Except RPK-(0.8-1.5)FSN(H)3M)
		
In case of applying high voltage to the terminal 1-2 of TB (Transmitting wires), the fuse on the PCB is cut. In such a case, firstly correct the wiring to TB and then turn ON switch 1 (as showing beside).		

◆ **DX-Interface settings**

◆ **PCB1 settings**


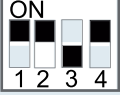
◆ **DSW3: capacity code setting**

No settings are required. This DIP switch is used to set the capacity code corresponding to the DX-Interface power (HP).

HP	2.0	2.5	3.0	4.0	5.0	6.0	8.0	10.0
Factory setting								

◆ **DSW4: unit model code setting and optional setting**

No settings are required.

Factory setting	
Enabled EC fan motor alarm by tachometer input	

◆ **DSW5 and RSW2: refrigerant cycle number setting**

It is required to change factory default setting, with a value of up to 63. In the same refrigerant cycle, set the same refrigerant cycle number for the outdoor unit and DX-Interface.

Factory setting		Example of system setting with a value of: 5	
DSW5	RSW2	DSW5	RSW2

◆ **DSW6 and RSW1: Unit no. setting**

It is required to change factory default setting, with any value from 0 up to 63. The number allocated to each KPI unit must be set as standard. Follow the instructions given in the Service Manual.


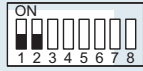
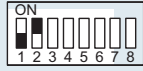
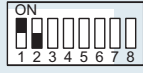
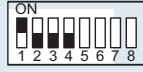


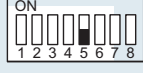

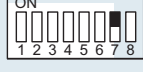

Factory setting		Example of system setting with a value of: 16	
DSW6	RSW1	DSW6	RSW1

◆ **DSW7: fuse recovery**

No settings are required.

Factory setting	
In case of applying high voltage to the control terminal 1-2 of TB2 (Transmitting wires)(position 17-18), the fuse on the PCB is cut. In such a case, firstly correct the wiring to TB and then turn ON switch 1 (as showing beside).	

◆ PCB2 settings
DSW1: Optional functions

Factory setting		
Switch 1 and 2: Capacity control setting	Discharge air control (Control by outlet temperature)	
	Indoor air control (Control by inlet temperature)	
	External duty control ⁽¹⁾	
Switch 3 and 4: Duty signal setting ⁽¹⁾	4~20 mA	
	0~10 V	
	0~5 V	
Switch 5: not used		
Switch 6: thermo on/OFF external input enabled ⁽²⁾		
Switch 7: Common operation of remote control switch ⁽³⁾		
Switch 8: not used		


NOTE

⁽¹⁾: If external duty control is selected (switch 1-2), check the proper selection for the duty signal (switch 3-4).

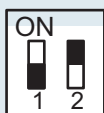
⁽²⁾: The thermo ON/OFF control can be driven externally by an input signal connected to the CN3 socket of the PCB1. The switch 6 of DSW1 in PCB2 must be switched on, then the input "i1" of CN3 is automatically set for thermo ON/OFF control. The setting of input "i2" is kept as set on the remote controller.

Please refer to Hitachi Indoor units Service Manual for further information about the setting and connection of the auxiliary inputs.

⁽³⁾: The installation of a specific remote controller is necessary during the installation commissioning. Once the installation commissioning is finished, this remote controller can be removed if the switch 7 is switched to ON position.

DSW2: End resistance

No setting are required.

All units


10.3 Shared wiring between outdoor and indoor units

CAUTION

- Connecting the service line cables incorrectly may lead to faults in the PCB.
- Protect wires, drain pipe and electric parts, etc. from rodents and insects, as they could bite unprotected parts and even cause a fire.
- Prevent wires from touching the gas refrigerant pipes, metal edges, printed circuit boards (PCB) or electrical parts on the inside of the unit as the wires could be damaged and even cause a fire.
- Secure the wires firmly inside the indoor unit using plastic ties.

General instructions to bear in mind when connecting the shared wiring between the outdoor and indoor units

- 1 Local or national regulations must be followed at all times during the preliminary work to prepare the communication line between units.

NOTE

For further information, consult the current regulations in the country where the unit is to be installed.

- 2 The units are installed grouped together for each planned cooling cycle. As a result, the refrigeration pipes and the control cables are connected grouped to the units belonging to the same cooling cycle.
- 3 Use a shielded twisted pair cable or shielded pair cable with a cross-section of over 0.75 mm² (equivalent to KPEV-S) for communications between the outdoor and the indoor unit and between the indoor units.
- 4 Always use a 2-core cable for the service line. Never use a cable with more than three cores.
- 5 Use shielded cable for intermediate wiring on lengths of less than 300 m to protect the units from electrical noise and electromagnetic interference. The size of the cable must be in line with national and local regulations.
- 6 Make a hole close the power cable connection opening when connecting several outdoor units from one power line.
- 7 Make sure the electric components supplied by the fitter (main power switches, circuit breakers, wires, connectors and connection terminals) have been selected correctly in line with the electrical data given in Chapter *Indoor units*, see on page <?>.

NOTE

Secure the rubber bushes with adhesive when the outdoor unit ducts are not used.

10.3.1 Connection layouts between outdoor and indoor units

Connect the wires between the indoor and outdoor unit as shown below.

The gas refrigerant pipes and control wiring are connected to units of the same cooling cycle.

Use a twisted pair cable (with a cross-section of over 0.75 mm²) for the service wiring between the outdoor and the indoor unit and between the indoor units. Preferably use a 2-core cable or maximum a 3-core cable.

Use shielded twisted pair cable for service wiring on lengths of less than 300 m between units to protect them from electromagnetic interference. The size of the cable must be in line with applicable local regulations, codes and standards.

Make a hole close the power cable connection opening when connecting several outdoor units to one power line.

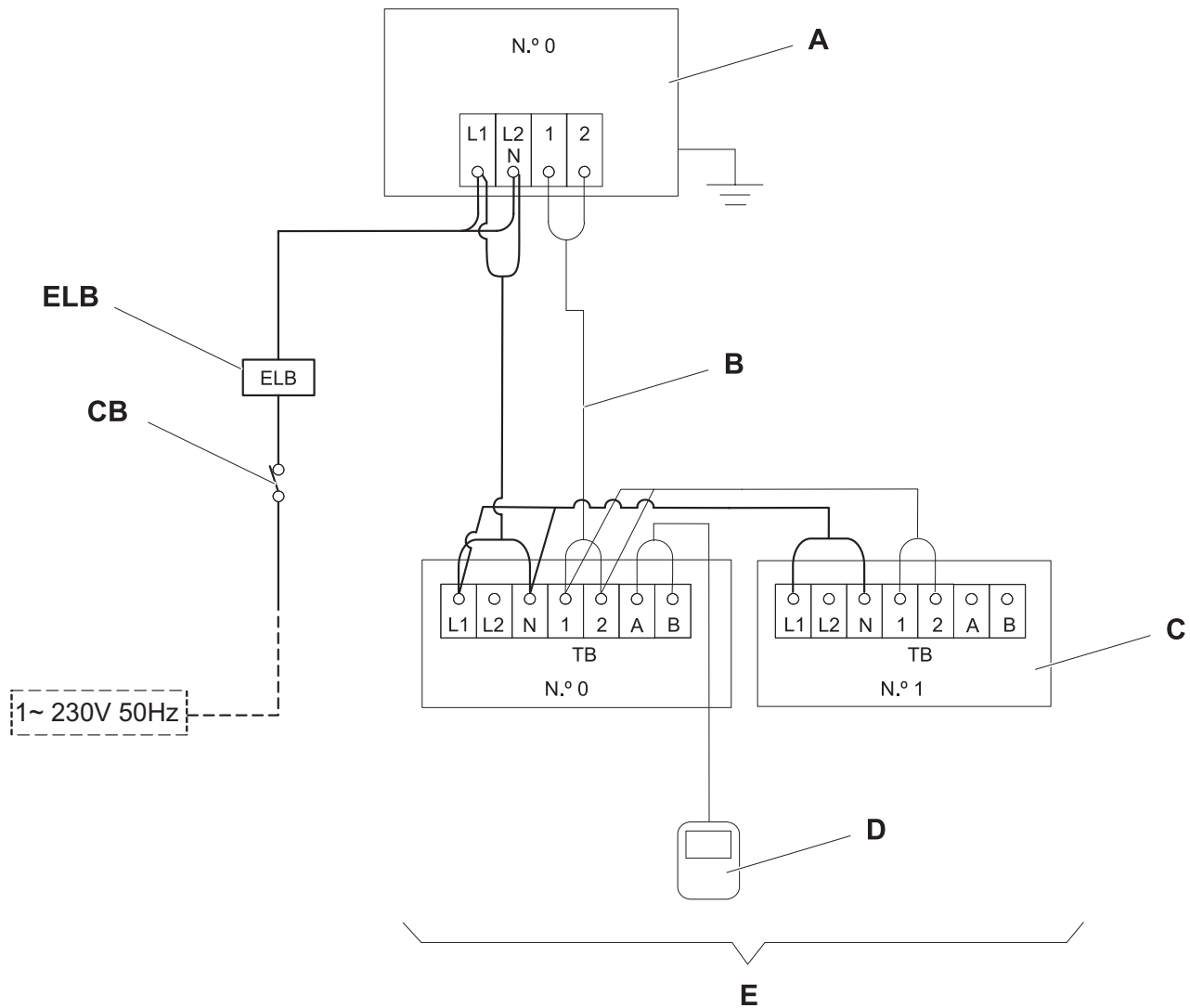
The recommended sizes for breakers and cables are indicated in *Main protection switch*, see on page 227 and *Cable size*, see on page 227.

If ducting is not used for the wiring (supplied by the fitter), fix the rubber bushings to the panel using adhesive.

CAUTION

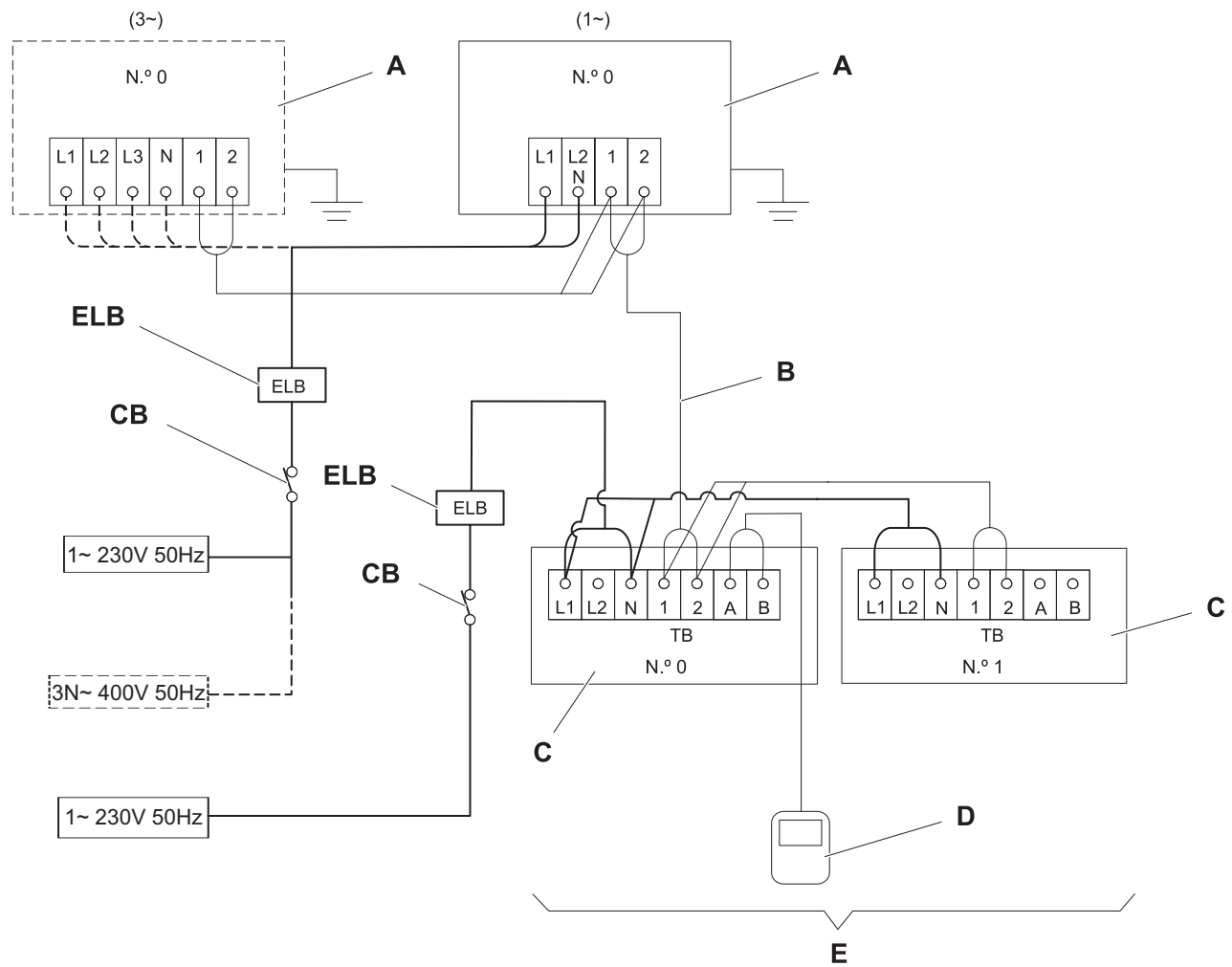
- Respect all applicable local regulations, codes and standards when carrying out the electrical installation.
- All installation equipment and wiring must be in line with applicable local regulations, codes and standards and with international codes.
- Pay special attention when connecting the power line. An incorrect connection may lead to faults in the unit circuit board.

Example of connection of the UTOPIA: series outdoor unit and indoor units powered by a shared line.



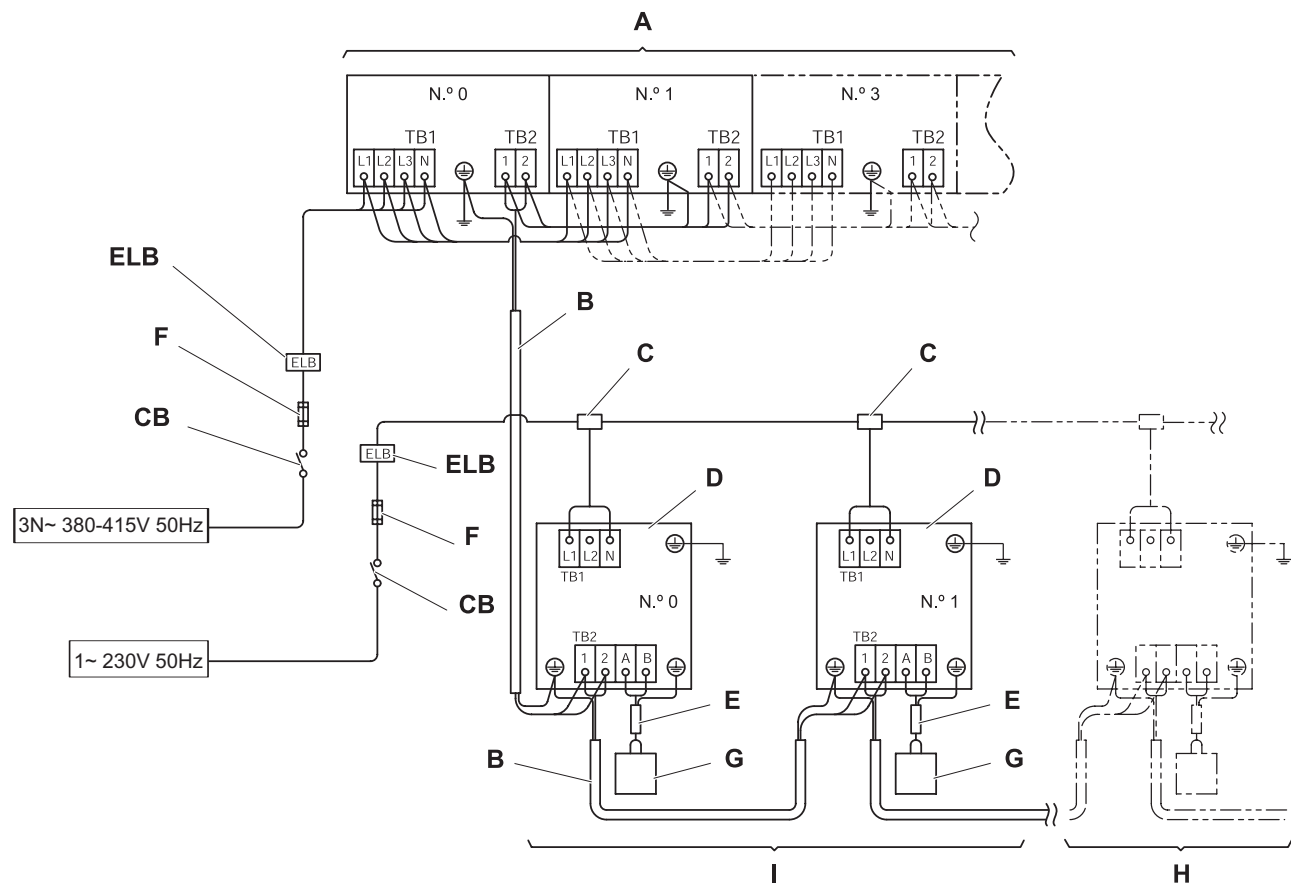
A	Outdoor unit no. 0
B	Service wiring (shielded twisted pair cable or shielded pair cable), 5 Vdc non-polarity (supplied by the fitter)
C	Indoor units
D	PC-ART remote control
E	A maximum of three units for each cooling cycle
CB	Circuit breaker (supplied by the fitter)
ELB	Earth leakage circuit breaker (supplied by the fitter)

Example of connection of the UTOPIA: series outdoor unit and indoor units powered by independent lines.



A	Outdoor unit no. 0
B	Service wiring (shielded twisted pair cable or shielded pair cable), 5 Vdc non-polarity (supplied by the fitter)
C	Indoor units
D	PC-ART remote control
E	A maximum of three units for each cooling cycle
ELB	Earth leakage circuit breaker (supplied by the fitter)
CB	Circuit breaker (supplied by the fitter)

Example of connection of the SET FREE FSN2: series outdoor unit and indoor units powered by independent lines.



A	Outdoor units. A maximum of four outdoor units for each power line (8-12 HP). A maximum of one outdoor unit for each power line (14-48 HP).
B	Service wiring (shielded twisted pair cable or shielded pair cable), 5 Vdc non-polarity H-LINK (supplied by the fitter)
C	Distribution box (supplied by the fitter).
D	Indoor units
E	Service wiring (shielded twisted pair cable or shielded pair cable) (supplied by the fitter)
F	Fuse (supplied by the fitter)
G	PC-ART remote control
H	Indoor unit system no. 1
I	Indoor unit system no. 0
CB	Circuit breaker (supplied by the fitter)
ELB	Earth leakage circuit breaker (supplied by the fitter)

10.4 Supply circuit dimensioning

10.4.1 Cable size

Model	Power supply	Maximum current (A)	Power supply cable size EN60 335-1	Transmitting cable size EN60 335-1
Indoor units (0.8-6.0) HP	1~ 230V 50Hz or 1~ 220-240V 50Hz	5.0	0.75 mm ²	0.75 mm ²
Indoor units (8.0-10.0) HP		10.0	1.5 mm ²	



NOTE

- Follow local codes and regulation when selecting field wires.
- Use the wires which are not lighter than the ordinary polychloroprene sheathers flexible cord (code designation H05RN-F).

10.4.2 Main protection switch

Indoor units

Model	Power supply	Maximum current (A)	CB (A)	ELB		
				No. of poles	A	mA
All indoor units ⁽¹⁾	1~ 230V 50Hz or 1~ 220-240V 50Hz	5	6	2	40	30
RPI-(8.0/10.0)FSN3E		10	10			

⁽¹⁾ Except RPI-(8.0/10.0)FSN3E.

10.5 DX-Interface electrical wiring

- Connect the electrical wires between the indoor unit and the outdoor unit, as shown in the next diagram.
- Follow the local codes and regulations when performing the electrical wiring.
- Use shielded wires for intermediate wiring to protect the units from noise obstacle at length of less than 300 m and size in compliance with local codes.
- In the event that a conduit tube for field-wiring is not used, fix rubber bushes to the panel with adhesive.
- All the field wiring and equipment must comply with local and international codes.
- When a cable gland is not used, it must be sealed properly in order to ensure the correct control box sealing.



CAUTION

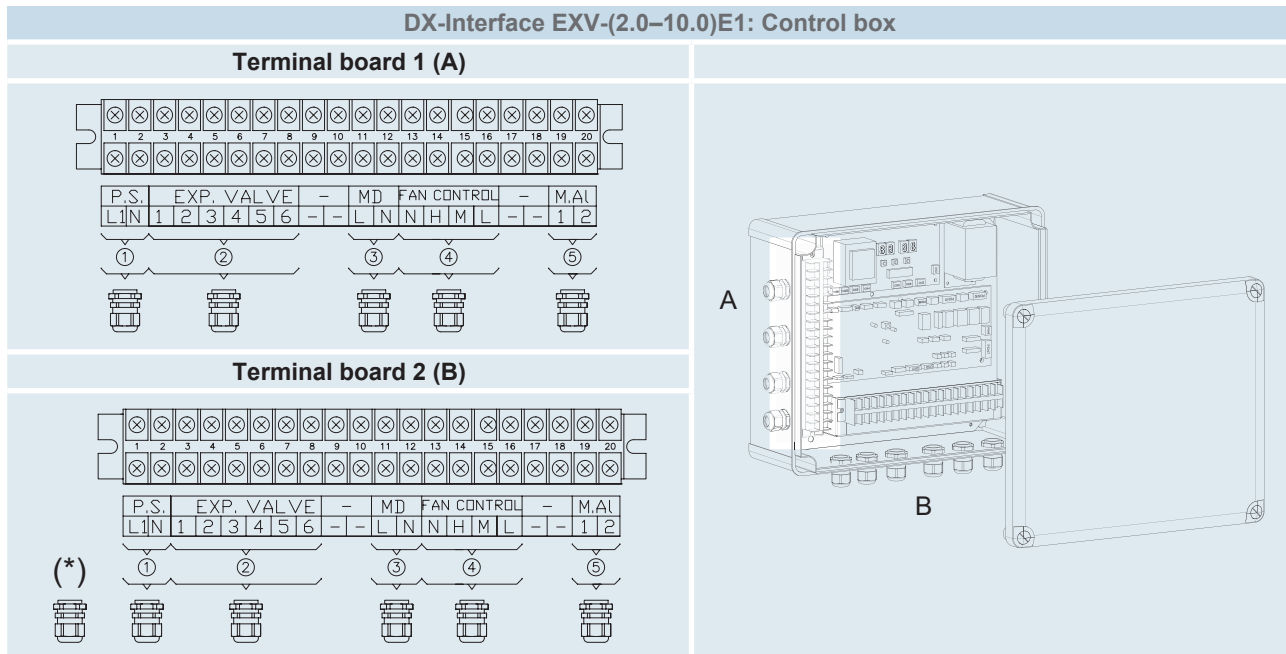
Pay attention to the connection of the operating line. Incorrect connection may cause PCB failure.



NOTE

Packing gland diameter specification: 6.0 mm (min) to 12.0 mm (max). If needed, install additional tube insulation or wind with insulation tape around the wire to make the wire thicker.

10.5.1 Control box terminal board

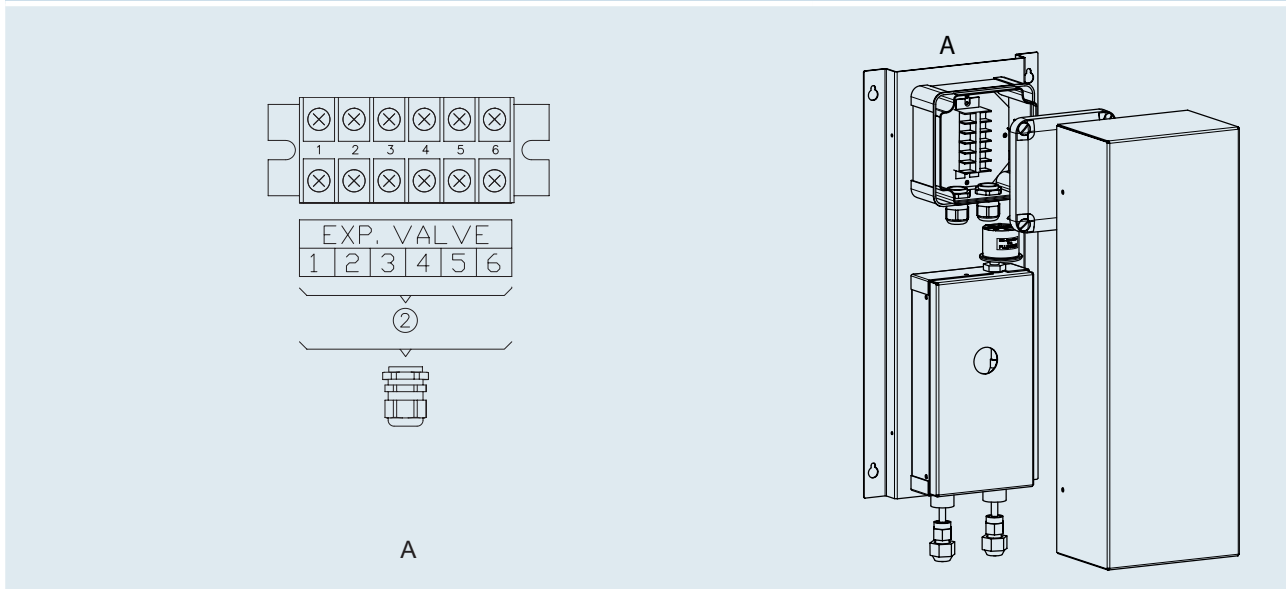


NOTE

(*): Packing gland for thermistor installation.

10.5.2 Expansion valve box terminal board



DX-Interface EXV-(2.0-10.0)E1: Expansion valve box



10.5.3 Terminal board connections and remarks

◆ Control box

Terminal board 1

Mark	Item	Name	Description	Wire and maximum current specification (EN60335-1)
⑥	1	V+	DUTY V: Duty control by voltage (0~10V) (0~5V) (optional): V+: Output power to device (+24Vdc)	Wire section: 3x0,5 mm ²  NOTE <i>Maximum power by 24Vdc output: 3 W</i>
	2	D	D: Voltage input (0~10V) (0~5V)	
	3	N	N: GND	
⑦	4	1	CO₂ signal (optional): Free contact: By closing the signal, the fan speed is set to High mode.	Wire section: 2x0,5 mm ²
	5	2		
⑧	6	T	EC1: PWM Output control for EC FAN 1 (optional): T: Tach input signal (Hz)	Wire section: 3x0,5 mm ²⁽¹⁾
	7	P	P: PWM output signal (0-100%)	
	8	G	G: GND	
⑨	9	T	EC2: PWM Output control for EC FAN 2 (optional): T: Tach input signal (Hz)	Wire section: 3x0,5 mm ²⁽¹⁾
	10	P	P: PWM output signal (0-100%)	
	11	G	G: GND	
⑩	12	V+	DUTY A: Duty control by current (4~20mA) (optional): V+: Output power to device (+24Vdc)	Wire section: 3x0,5 mm ²  NOTE <i>Maximum power by 24Vdc output: 3 W</i>
	13	D	D: Current input (4~20 mA)	
	14	N	N: GND	
⑪	15	1	FS: Flow switch (optional): Free contact between terminals 1(15) and 2(16)	Wire section: 2x0,5 mm ²
	16	2		
⑫	17	1	CONTROL: H-LINK and remote controller communication (Necessary): The H-LINK transmission between outdoor unit and indoor unit is 2 wired to terminals 1-2.	Wire section: 2x0,5mm ²
	18	2		
	19	A	The Remote controller must be connected between pins A and B (non polarity)	Wire section: 2x0,5 mm ²
	20	B		

 **NOTE**

⁽¹⁾: If fan wiring length is higher than 3 m, use shielded wires in compliance with local codes.

Terminal board 2

Mark	Item	Name	Description	Wire and maximum current specification (EN60335-1)	
①	1	L1	P.S.: Power supply (necessary): The mains power supply connection (230Vac) is wired to terminals L1 and N.	1~ 230V 50Hz, Max current: 5A Wire section: 3x0,75 mm ²	
	2	N			
②	3	1	EXP. VALVE: Expansion valve connection (necessary): Link to expansion valve assembly. Number links from 1 to 6 must match in e-box terminal board and expansion valve terminal board	Wire section: 6x0,5 mm ²	
	4	2			
	5	3			
	6	4			
	7	5			
	8	6			
-	9	-	Not used	-	
	10	-			
③	11	L	MD: Motor Drain discharge (optional): A drain water pump (field supplied) can be connected to DX-kit interface.	1~ 230V 50Hz Max current: 1A (output) Wire section: 2x0,75 mm ²	
	12	N			
④	13	N	FAN CONTROL: Fan tap speed control by HITACHI remote controller (optional): N-Neutral phase connection (common)	Maximum current allowed: 3,5A Wire section: 4x0,75 mm ²⁽¹⁾	
	14	H			H: High fan speed signal
	15	M			M: Medium fan speed signal
	16	L			L: Low fan speed signal
-	17	-	Not used	-	
	18	-			
⑤	19	1	M. AL: Motor alarm signal: Alarm input signal can be used for alarm link between the DX-Kit interface and the unit connected. If the jumper between terminal 1 (19) and 2 (20) is open, unit will be switched to alarm condition. Connect again to restart the system	Wire section: 2x0,75 mm ²⁽²⁾	
	20	2			


NOTE

- ⁽¹⁾: Locked rotor amperage (LRA) must be lower than 8 A.
- ⁽²⁾: Alarm signal with high power 1~ 230V 50Hz: In case of M. Al, connection is not necessary; the harness jumper provided inside the DX-Interface must be used.

◆ Expansion valve box

Mark	Item	Name	Description	Wire and maximum current specification (EN60335-1)
②	1	1	Control connection (necessary): Link to control assembly. Number links from 1 to 6 must match in expansion valve terminal board and control terminal board.	Wire section: 6x0,5 mm ²
	2	2		
	3	3		
	4	4		
	5	5		
	6	6		

11. Optional functions

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11.1 Optional functions on indoor units


The following table provides information on the optional functions available on indoor units. Consult the Service Manual for further information.

Optional function	Explanation	RCI(M)	RCD	RPC	RPI(M)	RPK	RPF(I)
Remote on/off	This function controls the remote starting and stopping of the system. This optional function is extremely practical in hotels and office buildings to control the indoor units from the building management system.	●	●	●	●	●	●
Cancellation of commands from the remote control after a forced stoppage	This function stops the indoor unit and cancels the commands from the remote control while it is enabled.	●	●	●	●	●	●
Operating mode setting for cooling or heating	This function remotely controls operating mode changes.	●	●	●	●	●	●
Control by room thermostat supplied by the fitter	This function manages the unit through an external thermostat. This function helps reduce problems caused by the stratification of air layers at different temperatures in the room.	●	●	●	●	●	●
Control by remote temperature sensor	Instead of using the information from the supply air thermistor on the indoor unit as a reference value for control purposes, the average value between this and the remote temperature sensor is used.	●	●	●	✘	●	●
Signal capture	This function enables the unit to provide information to enable the necessary systems.	●	●	●	●	●	●
Automatic operating when the electricity supply is restored	This function stores the settings of the unit in the event of a cut in the electric power supply. The unit re-starts when the electricity supply is restored.	●	●	●	●	●	●
Start-up function after a cut in the electricity supply.	This function stores the settings of the unit in the event of a cut in the electric power supply. The unit re-starts when the electricity supply is restored if it was running before the cut in supply.	●	●	●	●	●	●
Optional sensor connection	This function activates the connection for an enthalpy sensor or a CO ₂ concentration sensor (optional).	✘	✘	✘	✘	✘	✘

● Available.

✘ Not available.

11.2 Main optional functions on Active KPI

Optional function	Explanation	
Thermo-off input	Thermo-off control will be drove by an input signal, not considering Tx temperature.	
Defrost setting	It is possible to set the fan performance of the unit while the system is in defrost condition:	Fan stoppage: ventilation is stopped
		Fan at lowest speed: for installations where minimum ventilation rate must be kept
		Fan speed kept: ventilation rate is not affected during the defrost time
	 NOTE <i>During the defrost time, for those installations where the ventilation rate is kept (or reduced), even though when the unit is set in heating mode it will supply cold air. The installation of an auxiliary device to compensate the effect of defrost during this time is possible in SA section. From the Active KPI e-box an output signal is available, which will be turned on during the defrost time.</i>	
Filter sign	After a suitable number of hours of operation a servicing sign will be showed on the remote controller or the centralised system advising the filters cleaning or replacement.	
Remote on/off	It is possible to control the switching on and off of the unit by an external input.	
Remote heat/cool	Setting of the mode operation is possible by an external input	
Operation delay	Considering the Active KPI as a ventilation unit, could be useful to delay the starting of the unit to the starting of the A/C system. This setting of this time is available by the remote controller.	
Electric heater application	The installation of an electric heater before the unit in OA section is necessary for installations working with outdoor temperature below -5 °C. Besides of having a control signal for this electric-heater control available from the KPI PCB, the unit stoppage will be delayed for three minutes after the switching off of the remote controller to cold down the heater element avoiding the installation damage by the remaining heat.	
Fan stoppage delay	It is possible to set the time for which the Active KPI will remain operating when the system has been switched off. With this function it is possible to complete the air renovation of the installation, removing the remaining pollution and contamination. The installation will be completely fresh for the next starting of the activity. During this time the heat pump will be off to save energy.	
CO ₂ sensor	Fan performance control is possible by the output of a CO ₂ sensor. Both sensors, all on/off and proportional output sensors are accepted. In case of on/off sensors, the fans will work at their highest speed when the signal was turned on to help reducing the CO ₂ concentration on the air. On the other hand, by proportional output sensors (0~10V or 4~20mA output) the fan speed will be automatically adjusted by the CO ₂ concentration, what will help to keep low the CO ₂ concentration on the air with the minimum possible energy input.	
Fan high at starting	By the Remote Controller setting, it is possible to choose between three different ventilation modes:	Automatic ventilation: The damper is driven by the KPI control, selecting if the damper must be open or closed looking for the highest efficiency based on the set temperature and indoors and outdoors temperatures.
		Forced exchange: The damper is always closed, so the exchange between inlet and outlet air streams is always performed.
		Bypass ventilation: The damper is always opened, what means that the heat exchanger is bypassed and the exchange between inlet and outlet air streams is never performed. (This option is not able in case of Active KPI units)
Un-balanced ventilation	It is possible to set the fan speeds individually, promoting a room pressurization to avoid the smoke and pollution transfer from one room to another:	Normal operation: Both fans working at same air flow, so the air flow rate supply is the same one than extracted.
		Supply fan set: Supply fan rate is increased one step while exhaust fan keeps running at set air flow.
		Exhaust fan set: Exhaust fan rate is increased one step while supply fan keeps running at set air flow

1

11.3 Main optional functions on DX-Interface series 1

Optional function	Explanation
EC Fan or Tap Fan	The control of tap fans and EC fans is possible from the DX-Interface series 1.
Defrost signal	Output signal get from the DX-Kit when the system is in defrost mode.
Fan operation during defrost	During defrost operation three different fan speed settings are possible: fan speed kept as set, fan speed reduced to low speed and fan stoppage.
Thermo-on / thermo-off by an external input	Instead of typical control logic.
Operation delay	Once the system is turned on, the unit is kept in off during an specific time. Useful for applications where the DX-Kit is focused in comfort and not room conditioning
Thermistor selection	Option to select between inlet thermistor, external thermistor or remote controller thermistor to perform the cycle control (as inlet temperature) (Only if demand control is based on inlet temperature).
Fan Stoppage delay	Once the system is switched off, the unit keeps running for a suitable period of time, to for example, perform the air renovation once the activity is conclude.
CO ₂ sensor	By the action of an ON/OFF CO ₂ sensor, the DX-Kit switches the fan speed to high while the CO ₂ concentration exceeds the sensor detection threshold.

11.3.1 DX-Interface series 1 - Input / Output signals

Input signal	Available from DX-Interface series 1
01	Control using the field-supplied room thermostat (cooling).
02	Control using the field-supplied room thermostat (heating).
03	Function 1 - remote ON/OFF of the unit (by contact).
04	Function2 - turns unit ON.(by pulse).
05	Function2 - turns unit OFF.(by pulse).
06	Cancellation of commands from remote control switch after forced stoppage.
07	Setting of the cooling mode or the heating mode.
Output signal	Available from DX-Interface series 1
01	Operation signal.
02	Alarm signal.
03	Cooling signal.
04	Thermo-ON signal.
05	Heating signal.
06	Defrost signal.
Input signal	Available from Outdoor unit
01	Control using the field-supplied room thermostat (cooling).
02	Control using the field-supplied room thermostat (heating).
03	Function 1 – remote ON/OFF of the unit (by contact).
04	Function2 - turns unit ON (by pulse).
05	Function2 - turns unit OFF (by pulse).
06	Cancellation of commands from remote control switch after forced stoppage.
07	Setting of the cooling mode or the heating mode.

Output signal	Available from Outdoor unit
01	Operation signal.
02	Alarm signal.
03	Cooling signal.
04	Thermo-ON signal.
05	Heating signal.
06	Defrost signal.

11.3.2 Thermo - On / Off control option

With DX-Interface series 1 it is possible to perform the thermo-On/thermo-Off control by three different ways.

- Standard thermo-On / thermo-Off control (Default setting).
Suitable for installations controlled by suction or discharge temperature.
The thermo-On / thermo-Off logic is decided based on the difference between the inlet temperature to the coil and the set temperature on the remote controller or central controller.
- By an external input.
The thermo-On / thermo-Off control can be driven externally by an input signal connected to the CN3 socket of the PCB1 of the DX-Kit.
Setting note: DIP Switch 1 – Pin 6 of DX-Kit PCB2 (small PCB) must be switched on (PCB2-DSW1#6 switched ON). Once the PCB DSW has been set, the input “i1” of CN3 is automatically set for thermo-On / thermo-Off control. The setting of input “i2” is kept as set on the remote controller.
Please refer to Hitachi Indoor Units Service Manual for further information about the setting and connection of the auxiliary inputs to CN3 socket.
- By the duty signal.
For systems controlled by a duty signal it is possible to force the thermo-Off by the duty signal itself. When the duty signal becomes the minimum of its range (0 V or 4 mA) the system will be switched to thermo-Off condition. To be switched to thermo-On condition the duty must become higher than the 8% of its range.
Setting note: No additional setting is required once the demand control setting has been set as Duty control.

Type	Description
Standard thermo-On / thermo-Off control (Default setting)	Suitable for installations controlled by suction or discharge temperature. The thermo-On / thermo-Off logic is decided based on the difference between the inlet temperature to the coil and the set temperature on the remote controller or central controller.
By an external input	The thermo-On / thermo-Off control can be driven externally by an input signal connected to the CN3 socket of the PCB1 of the DX-Kit. Setting note: DIP Switch 1 – Pin 6 of DX-Kit PCB2 (small PCB) must be switched on (PCB2- DSW1#6 switched ON). Once the PCB DSW has been set, the input “i1” of CN3 is automatically set for thermo-On / thermo-Off control. The setting of input “i2” is kept as set on the remote controller. Please refer to Hitachi Indoor Units Service Manual for further information about the setting and connection of the auxiliary inputs to CN3 socket.
By the duty signal	For systems controlled by a duty signal it is possible to force the thermo-Off by the duty signal itself. When the duty signal becomes the minimum of its range (0 V or 4 mA) the system will be switched to thermo-Off condition. To be switched to thermo-on condition the duty must become higher than the 8% of its range. Setting note: No additional setting is required once the demand control setting has been set as Duty control.

11.4 Optional remote control functions

Element	Optional function	Individual setting	Settings	Setting conditions	Description
b1	Removal of heating temperature compensation	O	00	Standard setting. It increase the temperature +4°C	This function is used when the temperature setting displayed on the remote control and the supply air temperature of the indoor unit are must be the same.
			01	Removal	
			02	It increase the temperature +2°C ⁽¹⁾ .	
b2	Circulator function at heating Thermo-OFF	O	00	Not activated function	This function means that the fan unit remains running after the air conditioning system has stopped to prevent the air in the room from stratifying.
			01	Activated function	
b3	Forced compressor operation for at least three minutes	O	00	Not activated function	This function is used to protect the compressor, preventing it from being started or stopped for periods of less than three minutes.
			01	Activated function	
b4	Pre-determined filter cleaning period change	O	00	Standard	This function is used to modify the period during which the remote control indicates the air filter replacement.
			01	100 hours	
			02	1200 hours	
			03	2500 hours	
			04	Not used	
b5	Fixing of operation mode	X	00	Not activated function	Once the unit operating mode has been selected, this function prevents it from being modified from the remote control.
			01	Activated function	
b6	Fixing of setting temperature	X	00	Not activated function	Once the unit temperature has been selected, this function prevents it from being modified from the remote control.
			01	Activated function	
b7	Fixing of cooling operation	X	00	Not activated function	This function is available to use cooling mode only and to prevent heating mode from being enabled.
			01	Activated function	
b8	Automatic COOL/HEAT operation	X	00	Not activated function	This function allows the automatic change from the cooling to the heating mode for the units with the same refrigerant cycle.
			01	Activated function	
b9	Fixing of fan speed	X	00	Not activated function	Once the unit fan speed has been selected, this function prevents it from being modified from the remote control.
			01	Activated function	
bR	Not available	X	"-_" permanent	Not available	–
bb	Cooling temperature compensation	X	00	Standard setting. No compensation	This function is used to obtain longer cooling periods.
			01	It decrease the temperature -1°C	
			02	It decrease the temperature -2°C	

Element	Optional function	Individual setting	Settings	Setting conditions	Description
bC	Not available	-	00	Not available	-
			01	Use at 00 conditions	-
bd	Not available	-	00	Not available	-
			01	Use at 00 conditions	-
bE	Not available	-	00	Not available	-
			01	Use at 00 conditions	-
C1	Not available	-	00	Not available	-
			01	Use at 00 conditions	-
C2	Not available	-	"-" permanent	Not available	-
C3	HA function (only for Japanese market)	O	00	Not available	-
			01	Use at 00 conditions	-
C4	Drain pump in heating mode	O	00	Not activated function	This function is used to activate the drain pump in heating mode.
			01	Activated function	
C5	Static pressure selection (RPI)	O	00	Standard static pressure (factory set)	This function is used to change the static pressure of the RPI units from the remote control.
			01	High static pressure	
			02	Low static pressure	
	Increasing fan speed (RCI, RCIM, RCD)		00	Not available	This function is used to change the indoor units fan speed installed in high ceilings.
			01	Hi Speed 1 ⁽²⁾	
			02	Hi Speed 2 ⁽²⁾	
C6	PC-ART: increasing fan speed	O	00	Not activated function	PC-ARF: This function is used to increase the fan speed when the thermostat reaches the set temperature in heating using function C5.
	PC-ARF: Hi speed at heating Thermo-OFF		01	Activated function	
C7	Cancellation of the forced compressor operation for at least three minutes	O	00	Activated function	Cancels function b3.
			01	Not activated function	

Element	Optional function	Individual setting	Settings	Setting conditions	Description
E8	Thermistor of remote control switch	O	00	Not available	This function determines the thermistor to control the air temperature.
			01	Air temperature control using the remote control thermistor	
			02	Air temperature control using the average value of the air inlet thermistor and the remote control thermistor	
E9	Not available	–	“-” permanent	Not available	–
ER	Not available	–	“-” permanent	Not available	–
Eb	Selection of forced stoppage logic	X	00	Forced stoppage inlet: A contact	This function determines the logic operation for the forced stoppage contacts.
			01	Forced stoppage inlet: B contact	
Ec	Not available	X	00	Not available	–
			01	Use at 00 conditions	–
Ed	Not available	O	00	Not available	–
			01	Use at 00 conditions	–
Ee	Not available	O	00	Not available	–
			01	Use at 00 conditions	–
Ef	Change of louver swing angle	O	00	Standard (7 steps)	This function adjusts the angle of the air outlet louver.
			01	Draft prevention (5 steps)	
			02	High ceilings (5 steps) ⁽³⁾	
d1	Power supply ON/OFF 1	O	00	Not activated function	This function stores the unit settings in the event of a power cut. The unit is restarted when the power is re-established.
			01	Activated function	
d2	Not available	X	“-” permanent	Not available	–
d3	Power supply ON/OFF 2	O	00	Not activated function	This function is used to restart the unit after a power cut taking more than 2 seconds.
			01	Activated function	
d4	Cooling air temperature drop prevention.	O	00	Not activated function	This function changes the cooling operating conditions to avoid cold draughts.
			01	Activated function	
d5	Heating air temperature drop prevention.	O	00	Not activated function	This function prevents a drop in the air temperature by decreasing the fan speed, apart from the settings on the remote control.
			01	Activated function	

Element	Optional function	Individual setting	Settings	Setting conditions	Description
dE	Room temperature control for energy saving	O	00	Not activated function	This function saves energy when the outdoor temperature is lower than the air conditioning charge.
			01	Activated function	
d7	Only PC-ARF: Fall distance of elevating panel	O	00	200 cm	(Standard)
			01	100 cm	–
			02	150 cm	–
			03	200 cm	–
			04	250 cm	–
			05	300 cm	–
			06	350 cm	–
			07	400 cm	–
E1	KPI: ventilation mode	O	00	Automatic ventilation	This function is used to set the unit ventilation mode with energy / heat recovery.
			01	Ventilation with total heat exchanger	
			02	Ventilation with bypass (no total heat exchange)	
E2	KPI: Increasing air supply volume	O	00	Not activated function	This function is used to increase the air supply pressure in the room.
			01	Activated function	
			00	Not activated function	This function selects the enthalpy sensor input.
			01	Activated function	
E3	Not available	O	00	Not available	–
			01	Use at 00 conditions	
E4	Pre-cooling / pre-heating period	O	KPI:		This function delays the unit start-up with energy / heat recovery
			00	Standard	
			01	30 minutes	
E5	Not available	O	00	Not available	–
			01	Use at 00 conditions	
E6	Indoor fan operation time after cooling operation stoppage	O	00	Not activated function	This function prevents the condensation accumulation in the unit by keeping the fan running after it is switched off.
			01	60 minutes	
			02	120 minutes	
E7	Not available	O	00	Not available	–
			01	Use at 00 conditions	
E8	Fan operation control at heating Thermo - OFF	O	00	Not activated function	This function reduces the unit fan speed to prevent cold draughts.
			01	Activated function	

Element	Optional function	Individual setting	Settings	Setting conditions	Description
E9	Not available	O	00	Not available	-
			01	Use at 00 conditions	
ER	Not available	O	00	Not available	-
			01	Use at 00 conditions	
Eb	Fan operation control at heating Thermo-OFF	O	00	Not activated function	This function decreases the unit fan speed to reduce the spreading of smells and humidity.
			01	Low	
			02	Slow	
Ec	Forced Thermo-ON stoppage at cooling	O	00	Not activated function	This function is used to force stoppage when cooling is complete.
			01	Available	
Ed	Not available	O	00	Not available	-
			01	Use at 00 conditions	
Ee	Automatic fan speed control	O	00	Not activated function	This function limits the unit operation by automatically controlling the fan speed when the room temperature is close to the set temperature.
			01	Activated function	
F1	PC-ARF: Automatic OFF timer setting	X	00	Not activated function	This function is used to set the automatic timer to switch off when the unit has been started by remote control. Do not set the functions "0C"-"0F" when two remote control switches are used in the same remote control group.
			01	1 h	
			02	2 h	
			03	3 h	
			04-24	(04-24) h	
			0A	30 min	
	0B	90 min			
	PC-ART: Not available	-	00-0B	Not available	-
F2	Remote control main-sub setting	X	00	Main	This function is used when two remote controls are installed in a system.
			01	Sub	
F3	PC-ARF: Automatic reset of setting temperature ⁽⁴⁾	X	00	Not activated function	This function releases the fixed temperature setting after a certain time to limit unit operations and save energy.
			01	Activated function	
		PC-ART: Not available	-	00-01	Not available
F4	PC-ARF: Automatic reset time	X	00	30 minutes (factory setting)	This function is used to set the automatic reset time with the temperature setting
			01	15 minutes	
			02	60 minutes	
			03	90 minutes	
		PC-ART: Not available	-	00-03	Not available

Element	Optional function	Individual setting	Settings	Setting conditions	Description
F5	PC-ARF: Automatic reset temperature for cooling	X	19	19 °C	This function is used to set automatic temperature reset in FAN/COOL/DRY modes.
			20	20 °C	
			21-24	(21-24) °C	
			25	25 °C (factory setting)	
			26-28	(26-28) °C	
			29	29 °C	
	30	30 °C			
	PC-ART: Not available	–	19-30	Not available	–
F6	Automatic reset temperature for heating	X	17	17 °C	This function is used to set automatic temperature release in HEAT mode.
			18-20	(18-20) °C	
			21	21 °C (factory setting)	
			25-28	(25-28) °C	
			29	29 °C	
	30	30 °C			
	PC-ART: Not available	–	17-30	Not available	–
F7	Operation stoppage prevention by remote control switch operational error ⁽⁵⁾	X	00	Not activated function	–
			01	Activated function	
		PC-ART: Not available	–	00-01	Not available
F8	Lock function for operation mode selection	X	00	Not activated function	This function is used to prevent changes to the operating mode.
			01	Activated function (factory setting)	
F9	Lock function for temperature setting	X	00	Not activated function	This function is used to prevent changes to the temperature setting.
			01	Activated function (factory setting)	
FR	Lock function for fan speed selection	X	00	Not activated function	This function is used to prevent changes to the fan speed.
			01	Activated function (factory setting)	
Fb	Lock function for swing louver operation	X	00	Not activated function	This function is used to prevent changes to automatic louver operations.
			01	Activated function (factory setting)	

Element	Optional function	Individual setting	Settings	Setting conditions	Description
<i>FE</i>	Cooling lower limit for setting temperature	X	00	Standard	This function is used to define a lower temperature setting limit for FAN/COOL/DRY modes.
			01	Lower limit +1 °C	
			02	Lower limit +2 °C	
			03-08	Lower limit +(03-08) °C	
			09	Lower limit +9 °C	
			10	Lower limit +10 °C	
<i>Fd</i>	Heating upper limit for setting temperature	X	00	Standard	This function is used to define an upper temperature setting limit for HEAT mode. PC-ARF: up to -12 °C
			01	Lower limit -1 °C	
			02	Lower limit -2 °C	
			03-08	Lower limit -(03-08) °C	
			09	Lower limit -9 °C	
			10	Lower limit -10 °C	
<i>FE</i>	Not available	-	00	Not available Use at 00 conditions	-
			01		
			02		
<i>FF</i>	PC-ART: Lock function for timer	X	00	Not activated function	This function is used to lock timer activation.
			01	Activated function (factory setting)	
	PC-ART: Not available	-	-	Not available Use at 00 condition	-
<i>H1</i>	PC-ART: Maintenance alarms	O	00	Display	This function is used to display or hide maintenance alarms.
			01	Hide	
	PC-ART: Not available	-	-	Not available Use at 00 condition	-
<i>H2</i>	PC-ART: Automatic control indication PC-ARF: Indication of hot start	O	00	Display	This function is used to display or hide the automatic control indication.
			01	Hide	
<i>H3</i>	PC-ART: Operating mode change restriction	O	00	Operating mode change disabled (factory setting)	This function is used to configure restrictions to the HEAT mode.
			01	Operating mode set by the central control + FAN mode	
			02	Unlimited operating mode	
	PC-ART: Not available	-	-	Not available Use at 00 condition	-

Element	Optional function	Individual setting	Settings	Setting conditions	Description
H4	PC-ART: Operating modes for the ventilation unit with energy / heat recovery	O	00	Air conditioning only	This function is only available for the ventilation unit with energy / heat recovery.
			01	Ventilation only	
			02	Air conditioning + ventilation	
	PC-ART: Not available	–	–	Not available Use at 00 condition	–
H5	Central control available after forced stoppage	O	00	Not available	This function allows for central control after the forced stoppage of the unit.
			01	Available	
	PC-ART: Not available	–	–	Not available Use at 00 condition	–
J1	Temperature indication	X	00	Not available	PC-ARF only
			01	Available	PC-ARF only
J2	Not available	–	–	Not Used	PC-ARF only
J3	Run indicator color	X	00	Green	PC-ARF only
			01	Red	PC-ARF only
J4	Not available	–	–	Not available (Use as 00 conditions)	PC-ARF only
J5	Not available	X	–	Not available (Use as 00 conditions)	PC-ARF only
J6	Error sound	X	00	Once	PC-ARF only
			01	Sequence	PC-ARF only
J7	Not available	–	–	Not available	PC-ARF only
J8	Eco-operation ⁽⁶⁾	X	00	Not activated function	PC-ARF only
			01	Activated function	PC-ARF only
J9	Not available	–	–	Not available (Use as 00 conditions)	PC-ARF only
JR	Not available	–	–	Not available (Use as 00 conditions)	PC-ARF only
Jb	Not available	–	–	Not available (Use as 00 conditions)	PC-ARF only
f1	Not available	X	–	Not available (Use as 00 conditions)	PC-ARF only
f2	Not available	X	–	Not available (Use as 00 conditions)	PC-ARF only
f3	Not available	X	–	Not available (Use as 00 conditions)	PC-ARF only
f4	Not available	–	–	Not available (Use as 00 conditions)	PC-ARF only
f5	Human sensor detection level	–	00	Standard	PC-ARF only
			01	High	PC-ARF only
			02	Low	PC-ARF only

O: allows for individual setting.

X: the setting is made for all outdoor units.

–: not used.

⁽¹⁾ Setting "02" is not available on all indoor units.

⁽²⁾ On RPI units: 00 Increases speed 1 (standard), 01 Increases speed 2 (high static pressure), 02 Standard speed (low static pressure).

⁽³⁾ 00 standard (7-step operation); 01 draft prevention (cannot be set below two steps); 02 High ceilings (cannot be set above two steps).

⁽⁴⁾ In case that the set temperature is changed and kept within the set time at "F4", the temperature is automatically changed to "F5" and "F6". In case that the set temperature is out of range at "F5" and "F6", it is applied within upper and lower limit for the set temperature.

⁽⁵⁾ Operation is stopped by pressing the run/stop switch for 3 seconds.

⁽⁶⁾ When the unit is restarted by the remote control switch, the temperature automatically changes to the setting temperature of "F5" or "F6".

**NOTE**

- *Makes the changes to the optional settings at least three minutes following start-up.*
- *On modifying the "CF" (air outlet louver angle change) setting, restore the power supply or allow the automatic louver to make a full cycle in automatic mode to apply the optional setting.*
- *The optional function settings are different depending on the indoor or outdoor units. Check that the unit has the optional setting.*
- *Save the optional settings made on each outdoor and indoor unit in the "Setting" column of the table.*

11.5 Optional functions in the PSC-A64S central control

Element	Optional function	Option	Settings	Description
<i>R</i>	Operating mode setting	Setting "not displayed"	Available	This function eliminates the possibility of modifying the operating mode. The same optional function must be selected on the remote control. This option also affects the settings made with the PSC-5S.
			Not available	
<i>b</i>	Temperature setting	Setting "not displayed"	Available	This function eliminates the possibility of modifying the temperature setting. The same optional function must be selected on the remote control. This option also affects the settings made with the PSC-5S.
			Not available	
<i>c</i>	Cooling only setting	Setting "not displayed"	Available	The same optional function must be selected on the remote control. This option also affects the settings made with the PSC-5S.
			Not available	
<i>d</i>	Fan speed setting	Setting "not displayed"	Available	The same optional function must be selected on the remote control. This option also affects the settings made with the PSC-5S.
			Not available	
E	Automatic cooling/heating operation	Setting "not displayed"	Available	This function automatically switches from cooling to heating. This function cannot be used if it is not available on the remote control.
			Not available	

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